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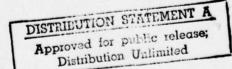
AN EXTENDED SET OF COSMIC RAY VARIATIONAL
COEFFICIENTS FOR EUROPEAN COSMIC RAY STATIONS

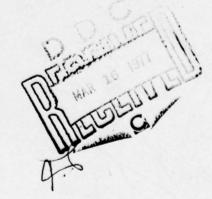
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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

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Variational coefficients quantitatively relate cosmic-ray spatial anisotropies and spectral changes to variations in ground-based cosmic ray monitor counting rates. We have calculated variational coefficients that are applicable to the analysis of a wide variety of transient cosmic ray phenomena. These calculations have been made for (1) a wide range of upper limiting rigidities from 29 to 500 GV; (2) power law rigidity spectra extending to exponents as high as +1.6; (3) spatial profiles independent of latitude; and (4) longitudinal

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Block 20. profiles including square waves of 139, 500, 600 and an isotropic case. These variational coefficients have been calculated for eleven European cosmic ray stations, the tables being compatible with a previous publication for stations in the Western Hemisphere.

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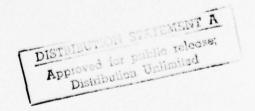
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AN EXTENDED SET OF COSMIC RAY VARIATIONAL COEFFICIENTS FOR EUROPEAN COSMIC RAY STATIONS

ABSTRACT

Variational coefficients quantitatively relate cosmic-ray spatial anisotropies and spectral changes to variations in ground-based cosmic ray monitor counting rates. We have calculated variational coefficients that are applicable to the analysis of a wide variety of transient cosmic-ray phenomena. These calculations have been made for (1) a wide range of upper limiting rigidities from 29 to 500 GV; (2) power law rigidity spectra extending to exponents as high as +1.6; (3) spatial profiles independent of latitude; and (4) longitudinal profiles including square waves of 10°, 30°, 60° and an isotropic case. These variational coefficients have been calculated for eleven European cosmic ray stations, the tables being compatible with a previous publication for stations in the Western Hemisphere.



PREFACE

The concept of variational coefficients, which quantitatively relate cosmic ray spatial anisotropies and spectral changes to variations in ground-based cosmic ray monitor counting rates, was introduced in 1963. Since that time three sets of variational coefficients have been published. The first two sets of tables were intended primarily for studies of diurnal variations, and as such contained limiting factors that made the use of these tables impractical for the study of other transient phenomena. In the third set of tables the variational coefficients for the American stations were extended with the removal of the original limiting factors, thus making these tables applicable for a variety of transient cosmic ray phenomena. Here in this extended set of variational coefficients the corresponding tables for European stations are now published, making possible the evolution of the longitudinal dependence and the temporal evolution of an anisotropy in the European-American range of longitudes.

It is necessary to know the asymptotic directions of cosmic-ray particles detected at a specific point on the earth for the calculation of the variational coefficients. These values were determined using a geomagnetic field model appropriate for 1975. A computer tape containing the asymptotic directions utilized in these tables has been deposited in World Data Center A for Solar-Terrestrial Physics, NOAA, Boulder, Colorado 80302, USA.

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1. INTRODUCTION

Variational coefficients, which quantitatively relate spatial and spectral cosmic ray anisotropies to changes in ground-based cosmic ray detector counting rates, are the key to our detailed understanding of such cosmic ray features as the diurnal variation. The concept of the variational coefficients was introduced by Rao et al. (1963), and three sets of tables have been published (McCracken et al., 1965; Shea et al., 1968; Gold et al., 1974). In spite of their ability to separate and analyze spatial and spectral sources of cosmic ray time variations, variational coefficients have not been widely used. We believe that one of the factors leading to the low usage are scientific limitations in the first two tables and geographical limitations in the third set. The first two tables of variational coefficients were oriented toward studies of the diurnal variation and they contain an unrealistically high upper limiting rigidity (R) for the anisotropy. While the high R produced errors of less than 25 percent in diurnal wave analysis, it is a much more severe limitation for anisotropies with amplitudes that increase with rigidity. The variational coefficients in the IQSY tables also include latitudinal and longitudinal dependences that are inappropriate for a number of cosmic ray phenomena as well as an insufficient range of spectra.

Since most neutron monitor cosmic ray events are characterized by counting rate changes on the order of only a few percent, reliable measurements can be made only with detectors having high counting rates. Only the superneutron monitors (NM-64) have sufficient counting rates at sea level for accurate measurements, but they are not distributed in an idealized network (Shea, 1972; Gold et al., 1975). Since most events are transient in nature or undergo considerable temporal evolution, measurements must be completed in a relatively short time. Spatial and spectral features of an anisotropy can be separated, however, only with

data from both a chain of cosmic ray monitors that cover a wide range of longitudes from which the longitudinal dependence and its temporal evolution can be determined and a second chain that covers a wide range of latitudes which yields the spectrum and latitudinal profile.

In an attempt to make the original tables of variational coefficients applicable for a variety of transient cosmic ray phenomena, an extended set of cosmic ray variational coefficients, with the removal of the original limiting factors, was published by Gold et al., (1974) for the following neutron monitor locations in the Western Hemisphere: Alert, Inuvik, Goose Bay, Deep River, Dallas, Mexico City, Chacaltaya, and Kula. In the present report, a similar set of tables for European neutron monitors, extending from Apatity in the north to Athens in the south are presented, thus expanding the global area over which analysis of identical transient phenomena can be undertaken.

2. ASYMPTOTIC CONES OF ACCEPTANCE

Ground-based cosmic ray monitors are useful in the study of cosmic ray anisotropies in space. However, in order to understand the relationship between observed cosmic ray time variations and spatial anisotropies, a thorough knowledge of the interdependence of asymptotic arrival directions and energies is required.

The asymptotic direction of a cosmic ray particle is generally determined by the trajectory-tracing technique in which the orbit of the particle with a specific rigidity is traced by numerical integration through a mathematical representation of the geomagnetic field. Asymptotic directions for particles with different rigidities are then utilized to determine the asymptotic cone of acceptance for a specific location on the earth. Both the asymptotic directions for a selected set of rigidities and the cutoff rigidity for each station must be determined for the calculation of the variational coefficients.

For the tables in this report, these values have been calculated using the International Geomagnetic Reference Field model of the quiescent internal geomagnetic field with the time derivatives applied such that the coefficients are appropriate for describing the geomagnetic field for Epoch 1975.0 (IAGA Commission 2, Working Group 4, 1969). Details of these type of calculations for the vertically incident cosmic ray particles are given by Shea and Smart (1975). All previous calculations of the variational coefficients (McCracken et al., 1965, Shea et al., 1968; Gold et al., 1974) were made utilizing asymptotic directions and cutoff rigidity values calculated with the coefficients for the Finch and Leaton geomagnetic field model which were derived for a 1955.0 Epoch (Finch and Leaton, 1957). It is emphasized that the different epochs of the magnetic field utilized in these calculations are not a limitation for their joint use. Although the vertical cutoff rigidities for stations such as Buenos Aires

and Mexico City have changed significantly over this 20-year interval (Shea, 1971), the corresponding changes in the variational coefficients are small.

The asymptotic cone of acceptance as defined by McCracken (1962) is the asymptotic solid angle containing the particle trajectories which make significant contributions to the detector counting rate. The properties of asymptotic cones of acceptance have been discussed in detail by Rao et al. (1963) so only some general properties will be listed here.

The asymptotic cone of acceptance for a given station is not a simple geometric region of detector sensitivity centered over the station meridian. Rather, asymptotic cones form complex shapes on the celestial sphere. Yet, there are some consistent properties related to the station location.

- (1) Equatorial cosmic ray stations tend to have asymptotic cones that are relatively narrow in latitude and quite wide in longitude. For example, Ahmedabad, India (latitude 23.01°N, longitude 72.61°E, geomagnetic vertical cutoff rigidity 15.98 GV*) has an asymptotic cone that is close to the equator with a latitude spread of $\pm 20^{\circ}$ and a longitudinal width of $\sim 180^{\circ}$.
- (2) Mid-latitude stations, from about 30° to 70° geomagnetic latitude, have cones with large latitude spreads and narrower longitude spreads but still have a significant fraction of their sensitivity near the equator. Thus, for Kiel, FRG (latitude 54.33°N, longitude 10.13°E, geomagnetic vertical cutoff rigidity 2.28 GV), the width of the asymptotic cone in latitude and longitude is about 40° and 100° respectively. Among the mid-latitude stations there is a systematic change of asymptotic cone shape with station latitude. The cones tend to be narrower in

^{*}Vertical cutoff rigidities in this report are those calculated with a 1975 representation of the geomagnetic field. Earlier publications of variational coefficients gave vertical cutoff rigidities as calculated using a 1955 representation of the geomagnetic field.

longitude but more widely spread in latitude as the station latitude rises. However, stations in this group, up to a geomagnetic latitude of approximately 45°, still have most of their sensitivity near the equator. Only those stations above about 50° geomagnetic latitude record a significant fraction of their counts from non-equatorial directions. For Inuvik, Canada, which is near the high latitude end of this group (latitude 68.35°N, longitude 226.27°E, geomagnetic vertical cutoff rigidity 0.17 GV), the latitude range is about 70° while the longitude spread is only about 10°.

(3) Polar cosmic ray stations have cones that for galactic cosmic ray responses are compact in both latitude and longitude. For example, Thule, Greenland (latitude 76.55°N, longitude 291.16°E, geomagnetic vertical cutoff rigidity approximately 0.0 GV) has an asymptotic cone that spreads only about 15 degrees in both latitude and longitude.

For positive particles, the geomagnetic field shifts the sensitivity peaks of all stations to an asymptotic position east of the station location. This magnetic deflection ranges from as little as 10° for polar stations to more than 70° for some mid-latitude stations.

3. VARIATIONAL COEFFICIENTS

Because of the complexity of the geomagnetic field, the asymptotic cones of acceptance of cosmic ray stations may be quite different, even for stations at the same latitude or longitude. The quantitative comparison of counting rate changes at different stations requires a detailed knowledge of the combined effects of the asymptotic cosmic ray trajectories, their positions as a function of rigidity, the coupling coefficients (as defined by Dorman, 1957) for the detector and the spatial and rigidity dependence of the anisotropy. The effects of each of these factors have been combined by Rao et al. (1963) in the concept of the variational coefficient.

If the isotropic differential cosmic ray intensity is J_o (R) where R is the particle rigidity and there is an anisotropy in an element of asymptotic solid angle Ω_i that can be expressed as $J_i(R) = J_o(1+A_iR^\beta)$ then the fractional change in the detector counting rate resulting from the anisotropy $J_o A_i R^\beta$ is $\frac{dN(\Omega_i)}{dN(\Omega_i)} = A_i V(\Omega_i, \beta)$

where $v(\Omega_i, \beta)$ is the variational coefficient. Rao et al. (1963) have shown that the variational coefficients are given by

$$v(\Omega_i, \beta) = \int_{R_{\text{cutiff}}}^{\infty} w(R) R^{\beta} U(\Omega_i, R) dR$$

where W(R) is the coupling coefficient for the detector and $U(\Omega_i, R)$ describes the accessibility to the detector of particles in the asymptotic solid angle Ω_i which have rigidity R. Since the asymptotic cones of cosmic ray stations vary considerably, their responses to an anisotropy may be quite different even though the anisotropy is constant with time.

The variational coefficients describe the change in counting rate resulting from an anisotropy in a small solid angle, so if the variational coefficients for all solid angles are known, the effects of any hypothetical anisotropy on the counting rate of a given detector may be calculated. An example of how the variational coefficients of stations in different latitudes can reveal the true nature of the structure of a free space anisotropy has been given for American stations (Gold et al. 1974). A similar example for Europe is not possible because there are no true polar nor equatorial cosmic ray stations in the European range of longitudes.

4. COMPARISON WITH EXISTING TABLES OF VARIATIONAL COEFFICIENTS

In order to use the variational coefficients to determine a station response to a given anisotropy, the spatial structure and the rigidity spectrum of the anisotropy must be included in the calculation. The IQSY tables of variational coefficients (McCracken et al., 1965; Shea et al., 1968) list the cutoff rigidities, trajectories and variational coefficients for 127 cosmic ray stations. However, the IQSY tables were oriented toward the study of the cosmic ray diurnal variations and have three features built into them which severely limit their usefulness in the study of transient cosmic ray phenomena.

- (1) The anisotropy in the IQSY tables was assumed to have an upper limiting rigidity of 500 GV. Although the diurnal variation is not effective up to this extreme limit, the error introduced by extending the calculation to 500 GV was small since the sensitivity of neutron monitors is quite low at these high rigidities and the diurnal wave is essentially independent of rigidity. Transient anisotropies, on the other hand, may have positive exponents, and events have been observed (Gold and Peacock, 1973) with as high as +1.8. With these sharply-rising rigidity spectra the anisotropy becomes very large at high rigidities and it becomes important to accurately specify the upper limiting rigidity (R_{max}), otherwise there may be large errors in the calculation. A series of six values of R_{max} covering the range from 29 to 500 GV have been chosen for the tables included in this report, and it is felt that they form a useful set for the description of most phenomena.
- (2) The IQSY tables were calculated for power law spectra with $\boldsymbol{\beta}$ covering the range from -1.5 to +0.6. While the lower end of the $\boldsymbol{\beta}$ range is sufficient, there are cosmic ray modulation phenomena which have exponents higher than $\boldsymbol{\beta}=+0.6$. The semidiurnal anisotropy, for example, (Pomerantz and Duggal, 1971, and references therein) has been shown to have a spectrum that is proportional to rigidity ($\boldsymbol{\beta}=1$) with

considerable spectral fluctuations from day to day, while Gold and Peacock (1973) have analyzed transient (fwhm ~4 hrs) Forbush predecreases with values from +0.2 to +1.8.

Phenomenological models that include a rising rigidity spectrum and a sharp cutoff at R are poor approximations in the vicinity of R max as the actual modulation would certainly exhibit a more gradual cutoff. Spectral functions such as a power law multiplying an exponential may be more realistic on both physical and theoretical grounds. However, such functions would require recalculation of the variational coefficients for each case and are not practical alternatives for a set of tables designed for general use. Thus, the tables included in this report have been calculated for power law anisotropies with exponents ranging from -0.2 to +1.6 and sharp upper rigidity cutoffs. The user is cautioned not to attach too much significance to spectral features near the upper cutoff.

be included in the individual $v(\Lambda_i, R)$ and cosine of the asymptotic latitude was included in the IQSY tables. The cosine is not a very severe limitation on the use of the tables since the asymptotic cones of all but the polar stations are concentrated near the equator where the latitude function is only a perturbation on the detector response. The tables presented in this report, however, have been calculated for anisotropies that are independent of latitude, which makes little difference for equatorial and mid-latitude stations but permits the polar stations to be used to determine the latitude dependence of an observed anisotropy.

The longitudinal dependences in the IQSY tables were sine waves with periods of 180° and 360° to simulate the semidiurnal and diurnal anisotropies. For transient phenomena an aperiodic function such as a square pulse would be more appropriate. The exact profile of the pulse (square, sine, Gaussian, etc.) is not critical for pulses up to about 90° in width. As long as the full width at half maximum of the pulses are the same, the wide asymptotic cones of most stations are unable to

distinguish among the various profiles. Only the polar stations and the extreme stations of the mid-latitude group have asymptotic cones that are longitudinally compact enough to separate different pulse shapes. Three longitudinal profiles corresponding to different widths of square waves have been included in the tables presented in this report along with diurnal and semidiurnal waves and an isotropic profile.

5. CHOICE OF STATIONS

All cosmic ray phenomena undergo temporal evolution; however, it is in the analysis of well-defined spatial anisotropies that the effects of temporal development are particularly severe. The idealized network (Gold, et al., 1975) would be a group of stations with asymptotic cones that are well clustered in longitude but spread in latitude so that a sufficient number of measurements may be taken at the same time to provide a "snapshot" of the event. Since equatorial and mid-latitude stations have the bulk of their sensitivity near the equator and cover a wide range of cutoff rigidities, they may be used to determine the rigidity spectrum of the anisotropy. The range of stations from the high mid-latitude group (geomagnetic vertical cutoff rigidity \$\preceq\$ 1 GV) through the polar group all have the same effective vertical cutoff rigidity (atmospheric) while their asymptotic cones cover a wide range of latitudes. Once the rigidity spectrum is known, the variational coefficients for these stations may be used to estimate the latitudinal structure of an anisotropy.

Only the American chain of stations from Chacaltaya on the equator up to the polar station Alert fulfill these conditions of being clustered in asymptotic longitude but having a wide spread in asymptotic latitude. Therefore, data from these stations can be used to analyze well-defined spatial anisotropies without disturbance of temporal development. The somewhat restricted rigidity span covered by the European group of stations is not sufficient for identical analyses since the asymptotic cone of the most northerly station, Apatity, still extends down to the equator while the cutoff of the most southerly station, Athens, is only 8.55 GV. All cosmic ray phenomena undergo temporal evolution, the amplitude of the anisotropy most likely changing in the course of time. However, it may be difficult to observe this phenomena utilizing data solely from the American chain of stations. In addition it is necessary to have the variational coefficients from stations in another range of longitudes to

observe the development of the longitudinal profile of an anisotropy. To delineate features such as these, the variational coefficients of the European stations, when combined with those published for the American stations, may be extremely useful. The stations selected for the tables in this report are Apatity, Oulu, Leeds, Kiel, Utrecht, Dourbes, Kiev, Jungfraujoch, Pic du Midi, Rome and Athens.

6. USE OF THE VARIATIONAL COEFFICIENTS

One reason that the variational coefficients have only occasionally been applied to the analysis of cosmic ray phenomena is that many researchers are unfamiliar with their use. Actually, all applications of the coefficients are simply fits of the values in the tables to the observed counting rate changes. The five characteristics of an observed cosmic ray anisotropy which can be determined with the aid of variational coefficients are its longitudinal, temporal and spectral dependence, the amplitude of the anisotropy and its latitudinal profile. However, because of the wide asymptotic cones of acceptance and the rigidity range of most cosmic ray monitors, these characteristics of the anisotropy mutually interact and are most easily separated when they are calculated in the order stated.

The determination of the longitudinal profile must be done with data from similar asymptotic latitudes to prevent contamination by any latitude effects. Therefore, a ring of equatorial or mid-latitude stations may be used since they all have the major fraction of their sensitivity centered near the equator. The equatorial stations have asymptotic cones of acceptance that are more closely confined to equatorial regions so they are not as disturbed by strong latitudinal profiles. But the resulting longitudinal profile of the anisotropy is strongly model-dependent, and these stations, with their wide asymptotic cones, can still only define the full width half maximum of an anisotropy that is significantly narrower than the asymptotic cone. Mid-latitude stations tend to have asymptotic cones which are more confined longitudinally and therefore yield more accurate profiles. Stations with very narrow asymptotic cones can almost give the longitudinal profile directly. The temporal dependence of the anisotropy may be found by fitting the anisotropy to the data from more westerly stations at later times and comparing the ratios of the observed change in counting rate to the variational coefficient amplitude for the chosen stations as a function of time,

The rigidity spectrum of the anisotropy may be determined by fitting the appropriate model to the observations (see Appendix A for diurnal waves, Appendix C for square waves and isotropic disturbances). The stations used in the spectral analysis must have similar asymptotic cones yet cover as wide a range of cutoff rigidity as possible. Uncertainties in cosmic ray measurements are usually relatively large since they include not only counting rate errors but also cosmic ray modulations such as the diurnal variation. Thus, in some cases it may not be possible to determine β and R_{max} uniquely, and a curve of β and R_{max} combinations may be the best that the data permits.

All the tables in the appendices are normalized to 100 percent at 1 GV; thus the amplitude of the anisotropy is simply the ratio of the observed variation to that predicted by the tables.

In principle, the latitude dependence could be found, once the spectrum is known, from the ratio of observed to predicted variations of stations with similar cutoff rigidities and asymptotic longitude but different asymptotic latitudes. The European chain of stations, by itself does not extend far enough in the poleward direction to be utilized to derive an unique latitudinal dependence. However, the variational coefficients for the European stations greatly enhance the possibilities of determining longitudinal and temporal variations of cosmic-ray anisotropies.

7. FORMAT OF THE TABLES

The tables have been calculated in three steps with the first group in Appendix A containing the variational coefficients calculated for R max values of 500, 188.75, 111.25, 80, 50 and 29 GV, independent of latitude. The format is similar to the IQSY listings with diurnal and semidiurnal amplitudes and phases listed along with the value of R max.

Appendix B contains the amplitudes and phases of the station responses to a square wave (lunes of the celestial sphere) 60° wide as a function of the asymptotic longitude of the center of the pulse.

Appendix C lists the amplitudes and phases of the station responses to 10°, 30° and 60° square waves and isotropic (360°) modulations as a function of the upper limiting rigidity. The response to other longitudinal profiles may be computed by taking appropriately weighted sums of the variational coefficients in Appendix A.

The amplitudes listed throughout these tables are normalized to A_i = 100 percent at 1 GV while the phase gives the correction for geomagnetic bending of the trajectories in hours or degrees measured from the geographic longitude of the station.

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APPENDIX A

COSMIC-RAY VARIATIONAL COEFFICIENTS

In the following section the cosmic-ray variational coefficients for eleven stations are tabulated together with ten values of β =+1.6 to β = -0.2. Tables are given for upper limiting rigidity values of 500, 188.75, 111.25, 80 and 29 GV.

GEOGRAPHIC LATITUDE = 67.55 GEOGRAPHIC LONGITUDE = ASY. LONG. / BETA = +1.6 +1.4 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.3 2414.27 711.45 209.65 61.78 0.47 18.21 5.37 1.58 0.14 0.04 3.96 939.41 9418.16 2962.83 2264.57 854.19 0.57 10 98.03 46.34 11.15 0.98 301 - 14 32.59 10 15 854.19 122.19 17.61 2622.00 902.16 312.82 38.67 5.00 0.68 20 1.83 0.26 109.44 13.82 195.45 36.80 15.97 6.93 0.57 20 25 84.81 1.30 0.25 3.01 0.11 1.54 25 30 189.21 38.09 7.67 0.14 84.89 17.09 3.44 0.69 0.31 30 35 185.12 40.38 1.92 86.46 18.86 8.81 4.11 0.90 0.42 0.20 35 6322.29 2014.75 647.40 7.56 2.54 0.86 40 209.87 68.66 22.68 0.30 40 45 2703.19 980.99 368.82 144.70 59.52 25.68 11.58 5.42 2.62 21662.87 7355.18 17.66 2.98 45 50 2541.11 895.32 322.49 119.06 45.17 7.13 707.70 1.26 50 55 1632.20 309.21 136.25 60.61 27.24 12.38 5.70 2.66 677.18 55 1.55 60 323.84 157.41 77.79 39.08 19.94 10.33 5.42 2.88 190.94 60 65 367.14 100.94 54.26 29.65 16.46 9.28 5.31 3.07 65 70 1707.93 881.58 471.89 260.96 148.39 86.34 51.17 30.78 18.73 11.51 75 1015.43 316.72 106.85 23.42 23.70 14.47 560.88 182.38 63.57 38.34 9.04 3190.03 1138.09 80 452.60 36.81 10.73 204.95 60.05 8.64 80 85 8259.45 2979.68 1104.03 169.36 32.55 71.69 16.04 5.06 423.12 85 90 560.57 139,69 6.73 2.84 278.07 37.33 11.34 71.38 20.15 4.23 622.42 579.80 301.28 2.09 1.05 90 95 146.30 17.13 8.45 4.19 71.30 34.88 95 251.99 109.59 3.95 100 47.69 20.77 9.05 0.33 100 105 2603.55 395.65 10.78 1010.17 156.78 63.02 25.78 4.63 2.06 0.96 105 6942.32 2163.07 675.74 6.91 0.94 110 211.78 66.70 21.21 2.38 0.47 0.0 110 115 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 115 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 43.77 2.55 181.48 89.13 21.50 10.56 5.19 1.25 0.61 0.30 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 185.12 1.92 40.38 86.46 18.86 8.81 4.11 0.90 0.42 0.20 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 189.21 84.89 38.09 17.09 7.67 3.44 1.54 0.69 0.31 0.14 145 150 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.03 150 155 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.04 155 160 36.82 15.99 6.95 1.33 0.59 0.27 84.83 0.13 3.03 160 165 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 165 170 195.14 34.70 6.17 82.29 14.63 1.10 0.46 0.20 0.08 2.60 170 0.0 0.0 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 194.26 32.86 2.29 0.39 175 180 79.89 0.94 13.51 5.56 0.16 0.07 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 42.39 6.86 190 195 651.46 262.03 105.39 17.05 2.76 1.11 0.45 0.18 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 217.38 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 1613.11 592.17 29.29 0.53 79.80 1.45 0.20 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 739.98 26.94 2.96 2232.59 245.26 81.29 8.93 0.98 0.33 0.11 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 4709.18 39.37 422.58 430.02 130.07 11.92 3.61 1.10 0.33 0.10 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0-0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 394.75 18.16 2.55 350 355 9980.41 3348.65 40.50 138.98 49.80 0.98 355 360 185.12 86.46 40.38 18.86 4.11 1.92 0.90 0.20 FIRST HARMONIC AMPLITUDE 63310.1622486.56 8350.42 3280.53 1378.52 304.68 159.61 88.93 624.07 52.20 PHASE 0.62 0.79 1.00 1.49 1.75 1.98 2.17 2.33 2.46 1.23 (IN HOURS SECOND HARMONIC AMPLITUDE 39911.1114333.92 5404.20 2173.73 449.97 946.93 232.16 74.96 128.38 45.66 0.96 1.08 1.24 1 . 43 1.66 1.89 2.09 2.26 2.40 2.50 (IN HOURS)

APATITY

18

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

APATITY

	CCDCCAD		APATI							
ASY.LUNG. BE	GEOGRAPHI				EDGRAPHIC			3.33	0.0	
ASTICUNO. BE	. IA1.0	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
0 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0 0
5 10	181.48	89.13	43.77	21.50	10.56	5.19	2.55	1.25	0.0	0.0
10 15	2264.57	854.19	322.77	122.19	46.34	17.61	6.71	2.56	0.98	0.37
15 20	389.40	162.18	67.56	28.14	11.73	4.89	2.04	0.85	0.35	
20 25	195.45	84.81	36.80	15.97						0.15
25 30			30.00		6.93	3.01	1.30	0.57	0.25	0.11
	189.21	84.89	38.09	17.09	7.67	3.44	1.54	0.69	0.31	0.14
	185.12	86.46	40.38	18.86	8.81	4.11	1.92	0.90	0.42	0.20
	1613.11	592.17		79.80	29.29	10.75	3.95	1.45	0.53	0.20
40 45	470.60	241.01	123,55	63.41	32.57	16.75	8.62	4.44	2.29	1.18
45 50			1190.55	472.60	189.87	77.35	32.03	13.51	5.81	2.56
50 55	1632.20	707.70	309.21	136.25	60.61	27.24	12.38	5.70	2.66	1.26
55 60	677.18	323.84	157.41	77.79	39.08	19.94	10.33	5.42	2.88	1.55
60 65	717.17	367.14	190.94	100.94	54.26	29.65	16.46	9.28	5.31	3.07
65 70	1707.93	881.58	471.89	260.96	148.39	86.34	51.17	30.78	18.73	11.51
70 75	1015.43	560.88	316.72	182.38	106.85	63.57	38.34	23.42	14.47	9.04
75 80	775.76	426.64	242.95	143.17	87.16	54.68	35.23	23.24	15.63	10.69
80 85	3731.95	1528.57		273.54	121.26	56.20	27.55	14.43	8.12	4.89
85 90	560.57	278.07		71.38	37.33	20.15	11.34	6.73	4.23	2.84
90 95	622.42	301.28	146.30	71.30	34.88	17.13	8.45	4.19	2.09	1.05
95 100	579.80	251.99		47.69	20.77	9.05	3.95	1.72	0.75	0.33
100 105		1010.17	395.65	156.78	63.02	25.78	10.78	4.63	2.06	0.96
105 110	0.54	0.50	0.46	0.42	0.39	0.36	0.33	0.31		
110 115	0.0		0.0						0.28	0.26
115 120		0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120 125	181.48	89.13	43.77	21.50	10.56	5.19	2.55	1.25	0.61	0.30
125 130	0,0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130 135	185.12	86.46	40.38	18.86	8.81	4.11	1.92	0.90	0.42	0.20
135 140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140 145	189.21	84.89	38.09	17.09	7.67	3.44	1.54	0.69	0.31	0.14
145 150	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
150 155	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04
155 160	195.47	84.83	36.82	15.99	6.95	3.03	1.33	0.59	0.27	0.13
160 165	0.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
165 170	195.14	82.29	34.70	14.63	6.17	2.60	1.10	0.46	0.20	0.08
170 175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175 180	194.26	79.89	32.86	13.51	5.56	2.29	0.94	0.39	0.16	0.07
180 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
185 190	0.0	0.0	0.0				0.0	0.0	0.0	0.0
190 195	651.46			0.0	0.0	0.0				
195 200		262.03		42.39	17.05	6.86	2.76	1.11	0.45	0.18
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200 205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205 210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210 215	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215 220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220 225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225 230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230 235	1613.11	592.17	217.38	79.80	29.29	10.75	3.95	1.45	0.53	0.20
235 240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240 245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245 250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250 255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255 260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260 265	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265 270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270 275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275 280	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0
280 285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285 290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290 295	0.0	0.0	0.0					0.0		0.0
295 300	0.0			0.0	0.0	0.0	0.0		0.0	
300 305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305 310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315 320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325 330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330 335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335 340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340 345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350 355	3038.63		465.22	183.39	72.67	28.95	11.59	4.67	1.89	0.77
355 360	185.12	86.46	40.38	18.86	8.81	4.11	1.92	0.90	0.42	0.20
FIRST HARMON										
AMPLITUDE	24484.041	0527.37	4671.42	2150.53	1031.84	517.69	271.97	149.51	85.80	51.22
PHASE	1.56	1.66	1.77	1.88	2.00	2.12	2.23	2.33	2.43	2.51
(IN HOURS)										
SECOND HARMO	NIC									
AMPLITUDE	17172.05	7352.01	3279.23	1535.00	757.55	394.40	215.91	123.61	73.55	45.24
PHASE	1.36	1.49	1.63	1.78	1.94	2.09	2.23	2.34	2.44	2.53
(IN HOURS				, , , ,	1	2.01				
THE UPPER LI	MIT FOR TH	IS CALCI	LATION 1	S 188 7	5 GV					

GEUGRAPHIC LATITUDE = 67.55 GEDGRAPHIC LONGITUDE = 33.33 +1.2 ASY. LUNG . / BETA = +1.6 +1.4 +1.0 +0.8 +0.4 +0.2 0.0 -0.2 +0.5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 43.77 2.55 0.30 181.48 89.13 5.19 1.25 10 21.50 10.56 0.61 10 15 651.45 262.03 42.39 17.05 6.86 1.11 0.45 15 4.89 20 389.40 162.18 67.56 28.14 11.73 2.04 0.85 0.35 0.15 20 1.30 25 195.45 84.81 36.80 15.97 6.93 3.01 0.57 0.25 0.11 38.09 1.54 30 189.21 0.69 84.89 17.09 7.67 3.44 0.31 0.14 0.90 30 35 185.12 86.46 1.92 18.86 8.81 4.11 0.42 0.20 0.0 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 470.60 40 45 123.55 32.57 8.52 2.29 241.01 63.41 4.44 1.18 50 2939.99 1253.54 538.40 101.99 45.09 20.18 9.16 1.97 233.20 4.22 55 309.21 27.24 50 1632.20 707.70 12.3R 5.70 2.66 1.26 136.25 60.61 77.79 10.33 55 60 677.18 323.84 157.41 39.08 19.94 5.42 2.88 1.55 65 367.14 60 717.17 190.94 29.65 100.94 54.26 16.46 9.28 5.31 3.07 65 70 1707.93 471.89 30.7A 881.58 260.96 148.39 86.34 51.17 18.73 11.51 1015.43 775.76 70 75 560.88 316.72 63.57 182.38 106.85 38.34 23.42 14.47 9.04 75 80 426.64 242.95 87.16 35.23 23.24 15.63 143.17 54.68 10.69 AO. 85 2118.84 936.40 421.02 193.74 91.96 45.45 23.61 12.98 7.59 4.69 85 90 560.57 278.07 139,69 71.38 37.33 20.15 11.34 6.73 4.23 2.84 4.19 90 95 622.42 579.80 301.28 146.30 71.30 34.88 17.13 8.45 2.09 1.05 95 100 251.99 109.59 47.69 20.77 9.05 0.75 0.33 990.44 6.83 100 178.27 105 418.00 76.98 33.73 15.03 3.18 1.52 0.76 105 0.54 0.33 110 0.50 0.46 0.42 0.39 0.36 0.31 0.28 0.26 0.0 110 0.0 115 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 115 0.0 0.0 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 89.13 43.77 5.19 2.55 0.61 0.30 125 181.48 1.25 21.50 10.56 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 185.12 86.46 40.38 8.81 1.92 0.90 0.42 0.20 18.86 4.11 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 189.21 140 145 84.89 38.09 17.09 7.67 3.44 1.54 0.69 0.31 0.14 0.01 145 150 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.03 0.03 150 155 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.04 155 160 195.47 36.82 15.99 6.95 1.33 0.59 0.27 84.83 3.03 0.13 0.01 160 165 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 165 170 170 175 195.14 82.29 34.70 14.63 6.17 2.60 1.10 0.46 0.20 0.08 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 194.26 79.89 32.86 5.56 2.29 0.94 0.39 0.16 0.07 13.51 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 651.46 262.03 105.39 42.39 17.05 6.86 2.76 1.11 0.45 0.18 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 1425.52 593.91 247.84 0.57 43.37 18.19 7.64 1.36 103.59 3.22 355 360 1.92 185.12 86.46 0.90 40.38 8.81 18.86 4.11 0.42 0.20 FIRST HARMONIC 15461.23 7234.16 3470.61 872.59 459.75 250.90 AMPLITUDE 141.85 83.02 1713.07 50.21 2.03 PHASE 2.08 2.13 2.18 2.24 2.30 2.36 2.42 2.49 2.55 (IN HOURS) SECOND HARMONIC 9657.60 4660.65 2322.45 1197.33 352.97 AMPLITUDE 639.07 201.44 118.55 71.78 44.62 1.97 PHASE 1.75 1.86 2.17 2.26 2.35 2.42 2.49 2.07 2.56 (IN HOURS)

APATITY

20

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

APATITY GEOGRAPHIC LATITUDE = 67.55 GEOGRAPHIC LONGITUDE = 33.33 ASY.LONG. / BETA = +0.8 +1.6 +1.4 +1.2 +0.4 +0.2 +1.0 +0.6 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 43.77 5.19 10 181.48 89.13 21.50 1.25 10.56 2.55 0.61 0.30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195.14 15 82.29 34.70 20 14.63 6.17 1.10 0.08 2.60 0.46 0.20 25 20 84.81 36.80 15.97 6.93 3.01 1.30 0.57 0.25 0.11 25 189.21 0.31 30 84.89 38.09 17.09 7.67 3.44 1.54 0.69 185.12 30 40.38 35 86.46 18.86 8.81 1.92 0.90 4.11 0.42 0.20 35 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 123.55 470.60 40 45 32.57 2.29 241.01 63.41 16.75 8.62 4.44 45 1248.55 569.70 365.78 56.77 12.79 50 121.40 26.81 6.17 3.01 1.48 55 170.97 50 786.48 2.05 80.35 38.00 18.09 8.68 4.20 1.01 60 677.18 323.84 157.41 77.79 39.08 2.88 1.55 19.94 10.33 5.42 60 65 717.17 190.94 100.94 9.28 367.14 54.26 16.46 3.07 29.65 5.31 70 65 1056.47 619.55 366.50 29.67 218.57 18.29 11.33 131.34 79.48 48.42 70 101.29 821.17 480.99 283.86 168.87 37.41 23.04 8.98 61.28 14.31 75 775.76 242.95 87.16 15.63 80 426.64 143.17 10.69 54.68 80 85 1273.12 594.48 282.77 19.91 6.98 137.84 69.35 36.30 11.49 4.45 90 85 560.57 139.69 278.07 71.38 37.33 11.34 6.73 4.23 2.84 20.15 34.88 90 95 146.30 8.45 622.42 301.28 71.30 17.13 4.19 2.09 1.05 579.80 251.99 95 100 109.59 47.69 20.77 9.05 3.95 1.72 0.75 0.33 3.13 100 105 144.72 76.08 40.02 21.08 11.12 5.89 1.68 0.92 0.51 105 110 0.54 0.50 0.46 0.39 0.33 0.28 0.26 0.42 0.36 0.31 110 115 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 181.48 43.77 89.13 21.50 10.56 5.19 2.55 1.25 0.30 0.61 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 185.12 86.46 40.38 18.86 8.81 4.11 1.92 0.90 0.42 0.20 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 84.89 1.54 140 145 189.21 38.09 17.09 7.67 0.69 3.44 0.31 0.14 145 150 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 150 155 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.04 155 160 195.47 0.27 84.83 36.82 15.99 6.95 0.59 3.03 0.13 160 165 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 165 170 195.14 34.70 82.29 14.63 6.17 2.60 1.10 0.46 0.20 0.08 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 280 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 579.80 109.59 251.99 47.69 20.77 9.05 3.95 1.72 0.75 0.33 355 360 185.12 86.46 40.38 18.86 8.81 1.92 0.90 0.20 4.11 0.42 FIRST HARMONIC 10386.85 5184.93 2643.16 228.94 1379.01 737.75 405.33 132.99 79.44 48.77 PHASE 7.39 2.22 2.25 2.28 2.31 2.35 7.43 2.47 2.52 2.58 (IN HOURS SECOND HARMONIC 6760.78 3521.41 1875.43 1022.20 43.99 570.53 326.15 190.94 114.44 70.17 2.17 2.27 PHASE 2.22 2.31 2.50 2.59 2.36 2.40 2.45 2.54 IN HOURS

21

THE UPPER LIMIT FOR THIS CALCULATION IS 80.00 GV

APATITY GEOGRAPHIC LATITUDE = 67.55 GEOGRAPHIC LONGITUDE = 33.33 ASY.LONG./BETA: +1.6 +1.4 +1.0 +0.8 +0.4 +0.6 +0.2 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 181.48 89.13 43.77 21.50 10.56 5.19 2.55 1.25 0.61 0.30 10 15 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 40.38 30 185.12 86.46 1.92 0.90 18.86 8.81 4.11 0.42 0.20 0.0 0.0 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 40 45 470.60 241.01 123.55 32.57 16.75 8.62 2.29 63.41 4.44 1.18 45 473.60 29.83 3.98 50 235.42 117.61 59.07 7.74 2.06 1.07 15.16 0.77 50 55 401.82 196.08 96.08 47.29 23.40 5.83 2.94 1.50 11.65 55 60 286.58 156.74 85.90 47.19 7.93 25.98 14.33 4.39 2.44 1.36 60 65 527.96 282.25 152.85 14.92 83.85 46.59 26.21 8.59 5.00 2.94 65 70 1056.47 619.55 366.50 218.57 131.34 79.48 48.47 29.67 18.29 11.33 70 75 821.17 480.99 283.86 37.41 168.87 101.29 61.28 23.04 14.31 8.98 75 80 580.61 208.25 344.35 128.53 80.99 52.08 34.14 22.77 15.43 10.61 80 85 497.87 257.68 136.38 74.18 41.66 24.25 14.66 9.20 5.98 4.01 85 90 371.36 193.17 101.60 54.29 29.66 16.71 9.80 6.03 3.92 90 95 622.42 301.28 146.30 71.30 34.88 8.45 2.09 17.13 4.19 1.05 95 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 144.72 105 76.08 40.02 21.08 11.12 5.89 3.13 1.68 0.92 0.51 0.54 105 110 0.50 0.46 0.42 9.39 0.36 0.33 0.31 0.28 0.26 0.0 110 0.0 115 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 43.77 181.48 89.13 21.50 5.19 1.25 10.56 0.61 0.30 0.0 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 185.12 40.38 0.90 86.46 1.92 0.20 18.86 8.81 4.11 0.42 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.03 150 155 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.04 155 160 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.03 0.03 0.03 160 165 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 165 170 . 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 185.12 40.38 86.46 1.92 0.90 0.42 0.20 18.86 8.81 4.11 FIRST HARMONIC 6515.45 3501.57 1910.79 AMPLITUDE 1060.20 598.90 202.56 46.5R 344.83 121.49 74.42 2.37 PHASE 2.34 2.56 2.35 2.48 2.51 2.60 2.42 2.45 (IN HOURS) SECOND HARMONIC AMPLITUDE 5029.87 2772.75 1551.47 509.80 881.97 299.85 179.56 109.51 68.04 43.07 PHASE 2.38 2.39 2.41 2.43 2.45 2.47 2.50 2.53 2.57 (IN HOURS)

22

THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

GEDGRAPHIC LATITUDE = 67.55 GEDGRAPHIC LONGITUDE = 33.33 ASY. LONG . / BETA = +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0. 0 5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15 50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 25 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 30 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 35 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 41.91 40 289.12 151.88 6.08 0.88 22.02 11.56 3.19 1.68 33.46 11.92 45 3.28 1.83 50 107.00 59.83 10.47 1.03 0.57 5.86 55 0.79 50 35.22 20.49 6.94 1.37 2.35 0.46 0.27 4.04 25.98 37.78 55 60 286.58 156.74 85.90 47.19 7.93 4.39 2.44 14.33 1.36 60 65 195.79 7.69 342.84 112.47 64.99 22.10 13.00 4.58 2.74 65 70 874.99 530.43 322.72 197.07 120.78 74.30 45.87 28.42 17.67 11.03 70 75 821.17 480.99 283.86 168.87 101.29 61.28 37.41 23.04 8.98 14.31 75 80 580.61 34.14 22.77 344.35 208.25 128.53 80.99 52.08 15.43 10.61 80 85 131.27 82.09 52.23 14.95 10.19 7.05 4.95 3.52 33.82 22.29 7.25 85 90 189.89 104.05 57.83 11.52 4.78 32.79 19.10 3.31 2.39 90 95 70.69 39.23 21.77 12.08 6.70 3.72 2.06 0.35 1.15 0.64 95 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 11.12 105 144.72 76.08 40.02 21.08 5.89 3.13 1.68 0.92 0.51 105 0.54 0.26 110 0.50 0.46 0.42 0.39 0.36 0.33 0.31 0.28 110 0.0 0.0 0.0 115 0.0 0.0 0.0 0.0 0.0 0.0 0.0 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 0.0 0.0 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 0.01 145 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 150 155 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.04 155 160 0.07 0.02 0.02 0.03 0.02 0.02 0.02 0.02 0.03 0.03 0.01 160 165 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 0.0 0.0 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 290 295 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC AMPLITUDE 105.39 66.68 3775.43 2188.47 1281.14 453.87 275.17 169.09 42.85 758.10 PHASE 2.42 2.43 2.44 2.46 2.48 2.50 2.53 2.56 2.59 2.64 (IN HOURS) SECOND HARMONIC AMPLITUDE 3495.99 2036.21 1197.62 711.90 160.64 40.96 428.03 260.52 100.41 63.66 PHASE 2.42 2.43 2.56 2.45 2.53 2.59 2.63 2.46 2.48 2.50 (IN HOURS)

APATITY

23

THE UPPER LIMIT FOR THIS CALCULATION IS 29.00 GV

ATHENS GEOGRAPHIC LATITUDE = 37.97 GEDGRAPHIC LONGITUDE = 23.72 ASY. LONG. BETA: +1.6 +0.4 +1.4 +1.2 +1.0 +0. A +0 6 +0.2 0.0 -0.2 919.00 369.63 148.67 59.80 24.05 9.67 3.89 1.56 0.25 0.63 701.91 397.90 0.97 7192.47 2235.59 7.97 2.74 10 223.19 72.08 23.71 0.35 10 3425.19 1163.52 47.78 6.02 2.18 0.81 0.30 16.84 12.84 4.57 15 9185.64 2961.93 967.00 107.67 20 320.16 36.84 1.66 0.61 20 4859.95 1607.93 547.74 192.62 70.00 10.16 4.03 1.64 0.68 25 26.27 25 30 16454.75 5213.83 1658.40 529.80 170.10 54.93 17.86 5.85 1.94 0.65 19860.95 6221.01 30 35 1957.12 618.84 196.86 63.07 20.38 6.66 2.20 0.74 12774.71 4630.81 35 40 1688.10 619.40 229.02 85.45 32.22 12.30 4.77 1.88 40 45 6666.42 2636.50 1046.59 417.04 166.83 67.01 27.03 10.95 2.73 1.82 45 8929.81 2964.26 1008.15 17.72 6.88 50 352.15 126.49 46.72 1.10 50 4751.45 673.03 1766.81 105.44 18.22 7.82 3.41 1.51 55 262.99 43.33 55 3935.38 1553.73 620.48 103.11 18.30 7.92 1.58 251.06 43.05 60 60 65 2507.15 1088.22 92.76 18.61 1.76 209.28 3.84 41.41 8.43 931.42 8.93 65 8190.52 2713.44 125.56 49.68 20.62 4.01 1.85 70 333.78 6475.27 2388.23 901.55 70 75 140.44 58.43 25.25 11.32 5.26 2.51 350.05 1754.29 766.15 337.61 150.19 67.50 30.60 14.08 6.54 3.08 1.46 80 18.21 80 85 1645.85 758.59 352.91 165.77 78.62 37.66 8.89 4.38 2.18 85 204.74 29.83 90 771.20 395.54 106.90 56.26 15.92 8.55 4.62 2.51 872.03 29.54 15.21 90 95 439.23 222.19 112.89 57.52 7.87 4.09 2.13 610.24 95 169.04 47.77 13.79 7.47 4.07 100 320.40 89.63 25.60 2.23 0.81 105 14.77 2.59 2.75 100 150.95 84.41 47.20 26.40 8.26 4.62 105 110 250.32 142.22 80.84 45.97 26.15 14.89 8.48 4.83 1.57 110 115 402.74 220.95 121.51 66.99 37.03 20.52 11.40 6.35 3.55 1.99 115 120 100.91 57.97 33.31 19.14 11.00 6.33 3.64 2.09 1.20 0.69 141.98 120 125 84.24 50.05 29.77 17.73 10.57 6.31 3.77 2.26 1.35 0.87 125 130 58.48 34.53 20.39 12.04 7.11 4.20 2.48 1.47 17.71 49.40 0.82 0.49 130 135 29.58 10.60 6.35 3.80 2.28 1.36 1.92 81.09 135 140 5.54 240.17 139.43 47.24 27.57 16.12 9.44 3.26 17.71 30.50 0.82 140 145 49.40 3.80 7.55 2.28 0.49 29.58 10.60 6.35 1.36 77.41 2.98 145 150 1.18 48.58 19.15 12.03 150 155 92.58 32.34 6.77 4.04 2.41 0.86 54.67 19.17 11.38 1.44 155 90.76 33.56 55.18 4.60 1.04 160 20.41 12.42 7.56 15.85 160 165 6.07 2.33 0.89 0.55 41.35 25.60 3.76 1.44 9.81 77.41 2.98 165 170 48.58 30.50 19.15 12.03 7.55 4.75 1.87 1.18 1.93 170 175 49.69 28.91 16.82 9.79 5.69 3.31 1.12 0.65 0.38 3.79 175 180 36.05 22.98 14.65 9.34 5.95 2.42 1.54 0.98 0.63 180 185 28.30 18.45 12.02 7.84 5.11 3.33 2.17 1.41 0.92 0.60 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 26.67 1.23 195 200 64.35 41.43 17.17 7.12 4.59 2.96 1.90 11.06 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 162.85 101.14 62.85 39.09 24.33 15.15 9.44 5.89 3.67 2.29 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.98 3.79 2.42 220 225 36.05 22.98 14.65 9.34 5.95 1.54 0.63 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.92 2.17 230 235 28.30 3.33 0.60 18.45 12.02 7.84 5.11 1.41 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 310 0.0 0.0 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.07 315 320 41.36 25.60 15.85 9.81 3.76 2.33 1.44 0.89 0.55 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 298.16 29.42 350 355 9792.62 3050.69 952.60 93.54 9.27 2.93 0.93 0.29 355 360 2275.58 835.36 306.66 15.17 5.57 2.04 0.75 0.28 112.57 41.33 FIRST HARMONIC AMPLITUDE 122842.2241991.1714698.63 1973.65 767.18 313.52 135.76 62.56 30.64 5294.03 PHASE 0.82 0.98 1.18 1.82 2.27 2.81 3.44 4.11 4.78 (IN HOURS) SECOND HARMONIC 175.99 AMPLITUDE 94603.7231584.3010710.32 3697.97 1304.17 471.78 68.09 27.46 11.56 0.73 0.98 1.99 PHASE 1.39 2.81 0.84 1.16 1.66 2.37 3.28

24

(IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

ATHENS GEDGRAPHIC LATITUDE = 37.97 GEDGRAPHIC LONGITUDE = 23.72 ASY.LUNG./BETA= +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 919.00 369.63 148.67 3.89 59.80 24.05 9.67 1.56 0.63 0.25 549.33 95.30 51.92 228.79 16.54 2.87 10 39.70 6.89 1.20 0.50 0.21 15 119.64 1.84 0.80 22.53 4.24 0.35 0.15 2542.49 955.12 360.39 7.75 20 52.14 3.02 136.68 20.02 1.19 0.47 25 1454.19 251.99 7.93 3.38 604.30 105.46 44.32 0.62 18.70 1.44 48.95 30 275.29 116.08 8.70 1.55 0.28 3.67 0.65 20.64 0.12 30 35 275.72 119.64 51.92 9.78 0.80 0.35 22.53 1.84 4.24 0.15 35 9625.24 3586.93 1342.12 40 191.01 72.85 28.05 10.92 4.31 1.72 40 2636.50 1046.59 10.95 6666.42 417.04 166.83 67.01 27.03 4.45 1.82 2286.67 957.46 401.53 45 50 168.66 70.96 29.90 12.62 5.34 2.26 0.96 50 55 1601.98 722.93 327.04 2.96 148.31 67.43 30.74 14.05 6.44 1.36 103.11 55 60 3935.38 1553.73 620.48 251.06 18.30 7.92 3.50 43.05 1.58 2507.15 60 1088.22 475.56 18.61 3.84 65 209.28 92.76 41.41 8.43 1.76 65 70 1547.37 706.63 324.80 150.30 70.03 32.86 15.52 7.39 3.54 1.71 70 75 75 3325.80 1344.35 555.57 235.37 102.43 45.83 21.07 9.94 4.80 2.36 80 1754.29 766.15 337.61 150.19 67.50 30.66 14.08 6.54 3.08 1.46 80 85 758.59 352.91 165.77 78.62 37.66 18.21 8.89 4.38 2.18 85 90 771.20 395.54 204.74 106.90 56.26 29.83 15.92 8.55 4.62 2.51 95 872.03 90 439.23 222.19 112.89 57.62 29.54 15.21 7.87 4.09 2.13 95 610.24 13.79 100 320.40 169.04 89.63 47.77 25.60 7.47 4.07 2.23 1.45 100 4.62 47.20 14.77 105 84.41 26.40 8.26 2.59 0.81 105 250.32 4.83 110 142.24 80.84 45.97 26.15 14.89 8.48 1.57 110 402.74 220.95 3.55 1.99 121.51 6.35 115 66.99 37.03 11.40 20.52 115 57.97 2.09 100.91 1.20 33.31 120 19.14 11.00 6.33 3.64 0.69 29.77 3.77 141.98 50.05 17.73 120 125 84.24 6.31 2.26 1.35 10.57 99.09 130 34.53 2.48 1.47 0.87 58.48 20.39 12.04 7.11 4.20 49.40 17.71 6.35 0.82 130 135 29.58 10.60 3.80 2.28 1.36 0.49 135 81.09 27.57 3.26 1.92 140 240.17 139.43 47.24 9.44 5.54 16.12 17.71 140 145 49.40 29.58 10.60 6.35 3.80 2.28 1.36 0.82 0.49 145 150 77.41 48.58 30.50 19.15 12.03 7.55 2.98 1.87 150 155 92.58 54.67 32.34 19.17 11.38 6.77 4.04 2.41 1.44 0.86 33.56 1.04 155 160 90.76 55.18 4.60 2.80 1.71 20.41 12.42 7.56 160 165 41.36 25.60 15.85 9.81 6.07 3.76 2.33 1.44 0.89 0.55 19.15 165 170 77.41 48.58 30.50 12.03 7.55 4.75 2.98 1.87 1.18 1.93 49.69 170 175 28.91 16.82 9.79 5.69 3.31 1.12 0.65 0.38 175 180 1.54 36.05 22.98 14.65 9.34 5.95 3.79 2.42 0.98 0.63 28.30 12.02 0.92 180 185 18.45 7.84 5.11 3.33 2.17 1.41 0.60 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 26.67 17.17 2.96 1.90 195 200 64.35 41.43 4.59 11.06 7.12 1.23 200 0.0 0.0 0.0 0.0 0.0 205 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 162.85 62.85 39.09 5.89 101.14 24.33 15.15 9.44 3.67 2.29 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 36.05 22.98 14.65 9.34 5.95 3.79 2.42 1.54 0.98 0.63 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.33 2.17 1.41 0.92 0.60 230 235 28.30 18.45 12.02 7.84 5.11 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15.85 5.07 315 320 41.36 25.60 0.89 9.81 3.76 2.33 1.44 0.55 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.75 355 360 2275.58 5.57 835.36 306.66 112.57 41.33 15.17 2.04 0.28 FIRST HARMONIC 42065.3117097.92 7056.51 2965.41 254.73 29.69 AMPLITUDE 560.95 119.76 1273.30 58.48 PHASE 1.72 1.90 3.51 4.53 2.11 4.00 5.07 2.37 2.69 3.07 (IN HOURS) SECOND HARMONIC 31419.2312440.67 4968.89 2004.28 337.93 141.75 817.65 60.46 26.25 11.61 PHASE 1.59 2.93 1.70 1.84 1.99 2.65 3.26 2.18 2.40 3.62 (IN HOURS)

25

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

ATHENS GEDGRAPHIC LATITUDE = 37.97 GEOGRAPHIC LONGITUDE = 23.72 ASY.LONG./BETA= +1.6 +1.0 +1.4 +1.2 +0.8 +0.4 +0.2 0.0 -0.2 +0.6 919.00 148.67 1.56 369.63 59.80 24.05 9.67 3.89 0.63 0.25 95.30 51.92 53.73 549.33 10 2.87 16.54 228.79 39.70 6.89 1.20 0.50 0.2 10 275.72 119-64 0.80 1.84 22.53 4.24 0.35 0.15 15 266.91 119.76 0.98 4.85 20 24.11 10.82 2.18 0.44 0.20 20 1454.19 251.99 7.93 604.30 105.46 44.32 18.70 3.38 1.44 0.62 48.95 275.29 8.70 1.55 30 116.08 3.67 0.28 20.64 0.65 0.12 51.92 30 35 275.72 119.64 22.53 1.84 4.24 0.80 0.35 0.15 35 5.77 40 522.92 245.48 115.48 54.43 25.71 12.17 2.74 1.30 0.62 40 4390.84 1801.14 739.93 304.47 125.51 21.46 8.90 3.70 1.54 51.84 45 50 2286.67 957.46 401.53 168.66 70.96 29.90 12.62 5.34 2.26 0.96 50 55 1601.98 722.93 327.04 148.31 67.43 30.74 14.05 6.44 2.96 1.36 55 1659.80 718.37 313.82 138.49 61.78 27.88 12.73 60 5.88 2.75 1.30 60 2507.15 1088.22 475.56 65 209.28 92.76 41.41 18.61 8.43 3.84 1.76 1547.37 3.54 65 70 324.80 150.30 70.03 32.86 15.52 7.39 1.71 706.63 70 75 1050.22 508.99 248.91 122.80 30.66 15.50 7.89 4.05 2.09 61.11 75 80 1754.29 766.15 337.61 150.19 67.50 30.66 14.08 6.54 3.08 1.46 80 85 1645.85 758.59 352.91 165.77 78.62 37.66 18.21 8.89 4.38 2.18 4.62 85 90 771.20 395.54 204.74 106.90 56.26 29.83 15.92 8.55 2.51 872.03 95 90 439.23 222.19 112.89 57.62 29.54 15.21 7.87 4.09 2.13 95 100 610.24 320.40 169.04 89.63 47.77 25.60 13.79 7.47 4.07 2.23 100 105 150.95 47.20 14.77 1.45 2.75 3.55 84.41 26.40 8.26 4.62 2.59 0.81 105 250.32 80.84 45.97 8.48 4.83 110 142.22 26.15 14.89 1.57 1.99 110 402.74 127.51 115 66.99 11.40 6.35 220.95 37.03 20.52 115 100.91 57.97 33.31 11.00 3.64 2.09 1.20 120 6.33 0.69 19.14 120 125 141.98 50.05 6.31 3.77 1.35 84.24 29.77 10.57 2.26 125 130 99.04 34.53 20.39 12.04 2.48 0.87 58.48 4.20 1.47 7.11 49.40 29.58 130 135 17.71 10.60 6.35 3.80 2.28 1.36 0.82 0.49 135 140 240.17 139.43 81.09 9.44 1.92 47.24 27.57 5.54 3.26 16.12 140 145 49.40 29.58 17.71 2.28 1.36 10.60 6.35 3.80 0.82 0.49 77.41 1.87 145 150 48.58 30.50 12.03 7.55 4.75 2.98 19.15 92.58 1.44 150 155 54.67 32.34 19.17 11.38 6.77 4.04 2.41 0.86 155 160 33.56 90.76 55.18 20.41 12.42 7.56 4.60 2.80 1.71 1.04 160 165 41.36 25.60 15.85 9.81 6.07 3.76 2.33 1.44 0.89 0.55 165 170 170 175 2.98 77.41 48.58 30.50 19.15 12.03 7.55 4.75 1.87 1.18 1.93 28.91 16.82 9.79 5.69 3.31 1.12 0.65 0.38 175 180 22.98 14.65 0.98 36.05 5.95 2.42 9.34 3.79 1.54 0.63 180 185 28.30 12.02 3.33 2.17 1.41 0.92 18.45 7.84 5.11 0.60 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 7.12 200 64.35 41.43 26.67 17.17 11.06 4.59 2.96 1.90 1.23 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 162.85 62.85 15.15 9.44 5.89 3.67 101.14 39.09 24.33 2.29 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 36.05 22.98 14.65 5.95 3.79 0.98 0.63 9.34 2.42 1.54 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.45 2.17 7.84 230 235 28.30 12.02 5.11 3.33 1.41 0.92 0.60 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 41.36 25.60 15.85 9.81 6.07 3.76 2.33 1.44 0.89 0.55 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 23536.4310395.67 4647.87 2107.89 AMPLITUDE 972.09 457.13 219.86 108.45 54.98 28.67 PHASE 2.37 2.76 5.34 2.54 3.30 4.02 4.44 4.89 3.01 3.64

(IN HOURS)
THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

2.19

17052.49 7337.48 3177.31 1385.59

2.42

2.29

(IN HOURS)
SECOND HARMONIC

AMPLITUDE

PHASE

2.57

608.96

2.73

269.92

2.92

120.73

3.13

54.51

3.37

24.85

3.64

11.43

3.94

ATHENS GEOGRAPHIC LATITUDE = 37.97 GEDGRAPHIC LONGITUDE = 23.72 ASY. LONG . / BETA = +1.6 +1.4 +1.2 +1.0 +0.4 +0.2 +0.8 +0.6 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 48.95 275.29 116.08 3.67 1.55 10 20.64 8.70 0.65 0.28 0.12 0.35 10 15 275.72 119.64 22.53 9.78 4.24 1.84 0.80 0.15 15 20 266,91 119.76 53.73 24.11 10.82 4.85 2.18 0.98 0.44 0.20 20 25 261.15 121.97 56.96 26.60 12.43 5.80 2.71 1.27 0.59 0.28 25 275.29 275.72 48.95 30 116.08 20.64 8.70 3.67 1.55 0.65 0.28 0.12 30 51.92 9.78 1.84 35 119.64 22.53 4.24 0.80 0.35 0.15 35 522.92 115.48 2.74 245.48 54.43 40 25.71 12.17 1.30 0.62 5.81 2.57 40 45 811.72 354.14 29.83 13.14 1.14 0.51 45 475.12 206.51 1093.63 89.80 39.07 3.23 50 2.96 17.01 7.41 0.61 722.93 50 55 1601.98 327.04 67.43 14.05 6.44 78.69 30.74 1.36 740.80 348.73 165.15 8.84 4.32 60 18.20 2.12 1.05 65 2.76 60 1040.07 493.18 234.19 53.03 12.07 5.77 1.32 111.36 25.29 65 70 1547.37 706.63 150.30 70 324.80 70.03 15.52 7.39 3.54 1.71 32.86 2.09 1050.22 508.99 248.91 15.50 122.80 61.11 30.66 4.05 75 80 4.98 835.29 188.93 10.19 2.45 396.52 90.40 43.45 20.98 1.21 80 85 1371.81 306.56 70.79 16.89 8.35 645.89 146.70 34.44 4.16 2.09 15.92 8.55 85 90 771.20 395.54 204.74 106.90 56.26 29.83 4.62 2.51 7.87 90 95 872.03 439.23 222.19 112.89 57.62 29.54 15.21 4.09 2.13 95 100 610.24 320.40 169.04 89.63 47.77 25.60 13.79 7.47 4.07 2.23 26.40 100 105 150.95 84.41 47.20 14.77 8.26 4.52 2.59 1.45 0.81 2.75 1.57 105 110 250.32 142.22 80.84 45.97 26.15 14.89 8.48 4.83 110 115 6.35 1.99 402.74 11.4 220.95 121.51 66.99 37.03 20.52 115 120 3.64 2.09 57.97 33.31 19.14 11.00 6.33 1.20 0.69 141.98 3.77 120 125 6.31 84.24 50.05 29.77 17.73 10.57 2.26 1.35 125 130 99.09 34.53 2.48 58.48 20.39 7.11 4.20 1.47 0.87 12.04 49.40 130 135 29.58 1.35 0.82 2.28 0.49 10.60 6.35 3.80 1.92 135 140 240.17 139.43 81.09 27.57 9.44 5.54 3.26 47.24 16.12 140 145 49.40 29.58 17.71 6.35 2.28 1.36 0.82 0.49 10.60 3.80 77.41 145 150 30.50 7.55 2.98 48.58 19.15 12.03 4.75 1.87 1.18 4.04 150 155 92.58 6.77 54.67 32.34 19.17 11.38 2.41 1.44 0.86 2.80 155 90.76 1.71 160 55.18 33.56 20.41 12.42 7.50 4.60 1.04 25.60 2.33 160 165 41.36 15.85 9.81 6.07 3.76 1.44 0.89 0.55 2.98 1.87 165 170 77.41 48.58 30.50 19.15 12.03 7.55 4.75 1.18 170 175 49.69 28.91 16.82 9.79 5.69 3.31 1.93 1.12 0.65 0.38 175 180 36.05 22.98 14.65 9.34 5.95 3.79 2.42 1.54 0.98 0.63 180 185 28.30 18.45 12.02 7.84 5.11 3.33 2.17 1.41 0.92 0.60 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 4.59 1.23 64.35 41.43 26.67 17.17 11.06 7.12 2.96 1.90 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 162.85 101.14 62.85 39.09 24.33 15.15 9.44 5.89 3.67 2.29 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.79 0.98 220 225 36.05 22.98 14.65 9.34 5.95 2.42 1.54 0.63 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 2.17 0.92 28.30 18.45 12.02 7.84 5.11 3.33 1.41 0.60 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 15.85 6.07 0.89 41.36 0.55 25.60 9.81 2.33 1.44 3.76 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 14029.54 6670.76 3158.55 1525.42 AMPLITUDE 746.93 187.89 96.82 50.89 27.29 371.43 PHASE 3.05 3.24 3.45 3.96 4.59 4.94 5.31 5.69 3.69 4.26 (IN HOURS) SECOND HARMONIC 9931.79 4563.97 2108.83 979.95 215.29 101.75 458.01 48.33 23.06 11.05

3.31

3.48

3.66

3.86

4.09

4.34

3.16

2.79

2.90

THE UPPER LIMIT FOR THIS CALCULATION IS 80.00 GV

3.03

PHASE

(IN HOURS

GEOGRAPHIC LATITUDE = 37.97 GEOGRAPHIC LONGITUDE = 23.72 ASY.LONG./BETA: +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 56.96 20 261.15 121.97 12.43 25 26.60 5.80 2.71 1.27 0.59 0.28 25 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 30 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 35 40 256.01 125.73 61.75 30.33 14.89 7.31 3.59 1.76 0.87 0.43 56.96 40 121.97 45 261.15 26.60 12.43 2.71 1.27 0.59 5.80 45 50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 517.15 465.08 50 247.70 55 118.71 56.93 27.32 13.12 6.30 3.03 1.46 0.70 1.77 229.09 60 113.24 56.17 27.95 13.96 7.00 3.52 0.90 4.79 773.16 65 373.43 180.46 60 87.26 42.21 20.43 9.89 2.32 1.13 70 721.09 354.82 86.49 42.85 10.59 5.28 21.27 2.64 1.32 70 75 507.59 269.59 143.26 76.17 40.52 11.48 1.74 21.56 6.12 3.26 75 80 568.37 276.76 135.20 66.29 32.63 8.01 4.00 1.01 16.13 2.01 80 85 820,81 410.17 205.70 103.53 52.31 6.90 3.54 13.50 1.82 26.52 85 90 504.29 275.78 151.01 82.79 45.45 24.98 13.75 7.58 2.31 4.18 90 95 872.03 439.23 222.19 112.89 57.62 29.54 15.21 7.87 4.09 2.13 95 100 610.24 320.40 169.04 89.63 47.77 13.79 7.47 4.07 2.23 25.60 2.59 100 105 150.95 84.41 47.20 14.77 26.40 8.25 4.62 1.45 0.81 8.48 4.83 105 250.32 142.22 80.84 45.97 2.75 110 26.15 14.89 110 115 402.74 220.95 121.51 66.99 37.03 11.40 6.35 3.55 1.99 20.52 115 120 1.20 100.91 57.97 33.31 19.14 11.00 3.64 2.09 0.69 6.33 141.98 29.77 120 125 84.24 50.05 17.73 6.31 3.77 1.35 10.57 2.26 99.09 125 130 34.53 58.48 29.58 20.39 12.04 4.20 2.48 1.47 0.87 49.40 130 135 10.60 6.35 3.80 2.28 1.36 0.82 0.49 81.09 17.71 139.43 135 240.17 140 47.24 27.57 9.44 5.54 3.26 1.92 16.12 140 145 49.40 2.28 10.60 6.35 3.80 1.36 0.82 0.49 77.41 2.98 150 48.58 30.50 19.15 4.75 12.03 7.55 1.87 1.18 150 155 92.58 54.67 32.34 19.17 4.04 1.71 11.38 6.77 2.41 0.86 155 90.76 33.56 160 55.18 12.42 4.60 2.80 20.41 7.56 1.04 160 41.36 25.60 15.85 0.89 165 2.33 9.81 6.07 1.44 0.55 3.76 77.41 1.87 165 48.58 30.50 2.98 170 12.03 19.15 7.55 1.18 170 175 49.69 9.79 1.93 28.91 16.82 0.38 5.69 1.12 0.65 3.31 175 180 36.05 22.98 14.65 9.34 5.95 2.42 1.54 0.98 0.63 3.79 5.11 180 185 28.30 18.45 12.02 7.84 3.33 2.17 1.41 0.92 0.60 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.96 1.90 195 200 64.35 26.67 17.17 4.59 41.43 11.06 7.12 1.23 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 162.85 101.14 62.85 39.09 9.44 5.89 3.67 2.29 24.33 15.15 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 36.05 22.98 14.65 9.34 5.95 3.79 2.42 1.54 0.98 0.63 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 28.30 2.17 18.45 12.02 7.84 5.11 3.33 1.41 0.92 0.60 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 0.0 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 0.0 0.0 0.0 0.0 255 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 0.0 0.0 0.0 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 0.0 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 0.0 0.0 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 41.36 25.60 15.85 9.81 6.07 0.89 2.33 1.44 0.55 3.76 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 7698.02 3927.75 2019.24 AMPLITUDE 1046.74 547.59 289.33 154.53 83.50 45.67 25.30 PHASE 5.60 4.05 4.22 4.41 4.61 4.83 5.33 5.89 6.18 5.07 (IN HOURS) SECOND MARMONIC AMPLITUDE 5365.55 2660.48 1322.49 658.92 328.98 82.39 41.29 20.70 164.53 10.38 PHASE 3.66 3.75 3.85 3.96 4.08 4.21 4.36 4.51 4.69 4.90 (IN HOURS

ATHENS

THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

ATHENS GEOGRAPHIC LATITUDE = 37.97 GEOGRAPHIC LONGITUDE = 23.72 ASY. LONG . BETA : +1.6 +0.8 +0.6 +0.4 +0.2 +1.4 +1.2 +1.0 0.0 -0.2 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 25 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 30 0.0 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 35 0.0 40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 40 45 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 50 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 50 55 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 203.93 15.53 60 107.13 56.27 29.56 8.16 4.29 2.25 1.18 0.62 0.0 60 65 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 65 10 203.93 107.13 56.27 29.56 15.53 8.16 4.29 2.25 1.18 0.62 11.48 70 75 507.59 269.59 143.26 76.17 40.52 21.56 6.12 3.26 1.74 75 80 51.22 29.06 16.49 9.36 5.31 0.97 0.55 0.31 3.01 86.99 13.41 80 85 303.66 162.47 46.60 24.99 7.20 3.87 2.08 85 90 504.29 275.78 151.01 82.79 45.45 24.98 13.75 7.58 4.18 2.31 95 8.91 16.42 1.43 90 354.88 191.53 103.48 55.96 30.30 4.84 2.63 354.24 95 100 107.29 194.67 59.31 32.88 18.28 10.20 5.70 3.20 1.80 100 105 84.41 47.20 26.40 14.77 8.26 4.62 2.59 1.45 0.81 105 110 2.75 80.84 121.51 250.32 142.22 45.97 26.15 14.89 8.48 4.83 1.57 402.74 110 115 1.99 6.35 220.95 66.99 37.03 20.52 115 120 57.97 33.31 19.14 11.00 6.33 74 2.09 1.20 0.69 141.98 120 125 50.05 . 31 3.77 1.35 84.24 29.77 17.73 10.57 2.26 130 58.48 .20 2.48 1.47 0.87 20.39 7.11 17.71 49.40 1.36 130 135 29.58 10.60 6.35 3.80 2.28 0.82 0.49 139.43 135 140 1.92 240.17 81.09 47.24 9.44 5.54 3.26 16.12 140 145 49.40 17.71 6.35 2.28 1.36 0.82 0.49 10.60 3.80 145 150 77.41 48.58 30.50 19.15 12.03 7.55 4.75 2.98 1.87 1.18 150 155 155 160 92.58 11.38 4.04 1.44 54.67 32.34 19.17 6.77 2.41 0.86 7.56 4.60 90.76 55.18 33.56 2.80 1.04 20.41 12.42 160 165 41.36 25.60 15.85 9.81 6.07 3.76 2.33 0.89 0.55 1.44 165 170 19.15 7.55 77.41 48.58 30.50 4.75 2.98 1.87 12.03 1.18 170 175 49.69 28.91 16.82 9.79 5.69 3.31 1.93 1.12 0.65 0.38 175 180 2.42 36.05 22.98 14.65 9.34 5.95 3.79 1.54 0.98 0.63 180 185 28.30 18.45 12.02 7.84 5.11 3.33 1.41 0.92 0.60 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 26.67 4.59 195 200 0.0 2.96 41.43 17.17 11.06 7.12 1.90 1.23 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 62.85 162.85 101.14 39.09 15.15 9.44 5.89 3.67 2.29 24.33 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 36.05 22.98 14.65 5.95 3.79 2.42 1.54 0.98 0.63 9.34 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.45 5.11 3.33 2.17 0.92 230 235 28.30 12.02 7.84 1.41 0.60 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 250 255 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 265 270 0.0 270 275 275 280 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 3.76 41.36 25.60 15.85 9.81 6.07 2.33 0.89 0.55 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 3787.97 2095.85 1164.21 5.47 5.60 5.74 37.92 AMPLITUDE 116.15 649.48 364.03 205.07 66.17 21.88 PHASE 5.47 5.89 6.58 6.40 6.98 6.05 6.22 (IN HOURS) SECOND HARMONIC 2497.47 1337.57 8.97 716.24 383.40 205.13 109.68 58.61 31.29 16.70 PHASE 4.87 4.94 5.01 5.41 5.54 5.69 5.86 5.10 5.19 5.30 (IN HOURS)

29

THE UPPER LIMIT FOR THIS CALCULATION IS 29.00 GV

DOURBES GEUGRAPHIC LATITUDE = 50.10 GEOGRAPHIC LONGITUDE = 14:0 +1.4 +1.2 +1.0 +0.8 +0.6 +0.6 ASY. LONG. / BETA : +0.4 +0.2 0.0 -0.2 5283.73 1642.31 2.02 515.64 163.96 52.95 17.42 5.86 0.71 0.25 1584.46 2421.35 783.30 10.80 4.03 10 257.86 86.84 30.10 1.57 0.64 993.44 9703.59 3095.92 320.99 3.89 0.47 104.59 34.43 11.48 15 14072.44 4785.38 25.17 20 1642.76 569.37 199.28 70.45 9.09 3.32 1.23 20 5306.61 2110.98 842.74 337.63 135.74 54.76 22.17 9.00 3.67 1.50 25 1843.95 807.01 355.36 157.45 70.20 31.49 14.22 6.46 2.95 1.35 30 35 5769.05 1892.00 643.68 229.48 6.49 3.00 86.44 34.54 14.60 1.43 35 40 2895.80 1034.09 377.34 141.23 54.39 3.72 21.59 8.83 1.61 3147.93 1284.87 40 45 535.35 228.28 99.81 44.79 20.63 9.74 2.32 985.19 45 50 446.48 205.10 95.66 45.36 21.89 10.76 5.38 2.74 1.42 50 261.13 1062.78 1025.02 514.78 55 133.82 69.29 19.14 10.20 5.49 2.98 36.24 8748.43 2983.33 60 400.78 161.80 70.29 32.76 16.21 8.41 4.52 762.20 60 3986.88 1710.39 65 46.87 25.82 354.71 172.87 88.16 14.64 8.49 1677.52 65 846.59 37.30 70 228.81 122.60 66.99 21.13 12.17 7.11 178.17 70 75 668.75 341.54 95.12 52.03 15.74 29.17 9.82 5.88 3.58 257.92 8.87 80 139.03 43.12 24.88 14.69 5.47 3.43 2.18 12.04 80 85 26.23 17.77 3.75 2.54 8.15 5.53 0.79 47.74 7.32 2.39 90 32.78 22.52 15.47 10.64 5.04 3.47 1.65 90 95 45.75 21.95 3.51 31.69 15.21 10.54 7.30 5.06 2.43 1.69 95 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 105 9.39 6.68 4.75 3.38 2.40 1.71 1.21 0.86 0.61 0.44 105 110 40.30 19.98 9.92 4.93 1.73 28.37 14.07 6.99 3.47 2.45 110 115 9.39 6.58 4.75 2.40 1.21 0.86 0.61 0.44 3.38 1.71 3.46 4.75 6.92 115 120 6.31 4.67 2.56 1.90 1.04 0.77 0.57 0.42 1.40 9.39 2.40 120 125 6.68 3.38 1.21 0.86 0.61 0.44 1.71 125 130 1.54 12.63 9.35 5.12 2.81 2.08 1.14 0.84 130 135 3.46 6.31 4.67 2.56 1.90 1.40 1.04 0.57 0.42 11.67 135 140 22.02 1.75 2.40 16.03 8.50 6.19 4.51 3.29 1.28 140 145 6.31 0.57 4.67 3.46 2.56 1.90 1.40 1.04 0.42 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 155 160 0.57 6.31 4.67 3.46 2.56 1.90 1.40 1.04 0.77 0.42 9.89 1.39 160 165 7.46 5.63 4.25 3.21 1.83 1.05 0.80 7.43 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.17 1.69 190 195 3.58 2.79 0.80 0.62 0.48 0.38 1.31 1.02 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 2.17 1.69 225 230 3.58 1.31 1.02 0.80 0.62 0.48 0.38 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 2.17 1.69 260 265 3.58 1.02 0.80 0.62 0.48 0.38 1.31 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.17 1.69 300 305 3.58 2.79 1.31 1.02 0.80 0.62 0.48 0.38 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0

350 355 355 360 866.96 361.14 151.06 63.47 26.80 4.85 2.08 0.90 0.39 11.37 FIRST HARMONIC 89003.10309C7.4411098.56 4160.21 1645.76 0.73 0.90 1.12 1.40 1.76 694.47 314.83 153.41 79.84 43.91 PHASE 1 . 40 1.12 1.76 2.17 2.63 3.10 3.55 3.96 (IN HOURS) SECONO HARMONIC 60775.7920606.88 7181.71 2605.56 1003.36 29.31 419.43 192.87 52.07 96.89 1.07 PHASE 0.68 0.85 1.38 2.68 3.13 3.52 3.86 1 . 76 2.21 (IN HOURS) THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

0.0

0.0

134.79

230.97

128.70

236.74

166.94

31.71

1.69

0.0

0.0

40.80

77.15

45.36

13.58

76.66

58.28

1.31

0.0

0.0

12.35

25.95

16.27

25.17

20.40

1.02

0.0

0.0

0.80

3.74

8.80

5.94

2.49

8.41

7.16

0.0

0.62

0.0

1.14

3.00

2.20

1.07

2.87

2.52

0.0

0.0

0.48

0.34

1.03

0.83

1.00

0.89

0.0

0.0

0.38

0.10

0.36

0.32

0.20

0.36

0.31

0.0

0.0

445.63

696.71

371.63

739.27

479.45

74.10

2.17

310 315

315 320

320 325

325 330

330 335

335 340

340 345

345 350

0.0

0.0

404.78

3.58

4880.18 1474.24

6487.29 2117.81

3254.67 1091.29

7389.93 7329.07

3985.35 1380.53

0.0

2.79

0.0

173.17

DOURBES GEOGRAPHIC LATITUDE = 50.10 GEOGRAPHIC LONGITUDE = ASY.LONG./BETA= +1.6 +1.4 +1.2 +1.0 +0.8 +0.5 +0.4 +0.2 0.0 -0.2 403.55 168.07 70.01 29.17 12.15 5.06 2.11 0.88 0.37 0.15 10 390.61 180.25 83.50 38.83 18.12 8.49 3.99 1.88 0.89 0.42 196.08 87.98 3.57 1.60 17.71 0.32 0.14 15 20 6878.59 2544.29 942.96 130.56 6.94 1.01 48.84 18.36 350.34 2.64 20 25 5306.61 2110.98 842.74 135.74 9.00 1.50 337.63 54.76 22.17 3.67 30 1843.95 807.01 355.36 14.22 2.95 31.49 6.46 70.20 30 35 417.76 198.05 888.86 94.69 45.65 10.86 5.36 1.33 22.18 2.66 35 40 267.24 123.17 2.71 582.14 56.99 26.46 12.33 5.77 1.27 0.60 40 45 3147.93 1284.87 535.35 99.81 20.63 4.71 228.28 44.79 2.32 45 50 985.19 446.48 205.10 95.66 21.89 10.76 5.38 45.36 2.74 1.42 261.13 50 55 1025.02 514.78 133.82 69.29 19.14 10.20 5.49 2.98 36.24 55 60 1554.58 742.24 362.98 181.75 93.08 48.68 25.94 14.06 7.73 4.31 60 3986.88 1710.39 88.16 65 762.20 354.71 172.87 45.87 25.82 14.64 8.49 70 65 1677.52 846.59 435.71 228.81 122.60 66.99 37.30 21.13 12.17 7.11 70 75 668.75 178.17 341.54 95.12 52.03 29.17 16.74 9.82 5.88 3.58 75 257.92 80 8.87 139.03 76.54 43.12 24.88 14.69 5.47 3.43 2.18 25 26.23 2.54 0.79 80 17.77 12.04 8.15 5.53 3.75 1.72 1.17 85 90 47.74 5.04 22.52 7.32 3.47 2.39 32.78 15.47 10.64 1.65 21.95 3.51 90 95 45.75 5.06 31.69 15.21 10.54 7.30 2.43 1.69 95 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 105 9.39 6.68 1.21 0.86 0.61 3.38 2.40 1.71 0.44 105 19.98 6.99 110 40.30 28.37 14.07 9.92 4.93 3.47 2.45 1.73 110 9.39 115 6.68 4.75 3.38 1.71 1.21 0.86 0.61 0.44 2.40 115 120 6.31 0.77 3.46 1.90 0.57 4.67 2.56 1.40 1.04 0.42 4.75 120 125 9.39 1.71 0.86 6.68 3.38 2.40 1.21 0.61 125 130 12.63 9.35 6.92 3.79 2.81 2.08 1.54 0.84 5.12 1.14 130 135 6.31 4.67 3.46 2.56 1.90 1.40 1.04 0.77 0.57 0.42 135 140 22.02 16.03 11.67 8.50 6.19 4.51 3.29 2.40 1.75 1.28 0.77 140 145 6.31 4.67 3.46 2.56 1.90 1.40 1.04 0.57 0.42 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.57 155 160 4.67 0.77 6.31 3.46 2.50 1.90 1.40 1.04 0.42 160 165 9.89 2.43 1.39 7.46 5.63 4.25 3.21 1.83 1.05 0.80 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 190 195 2.17 1.02 3.58 1.69 0.80 0.62 0.48 0.38 1.31 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 2,17 225 230 3.58 1.69 1.31 1.02 0.80 0.62 0.48 0.38 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 3.58 2.79 2.17 1.69 0.80 0.62 0.48 0.38 1.31 1.02 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 2.79 2.17 3.58 1.69 1.31 1.02 0.80 0.62 0.48 0.38 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 315 320 3.58 2.17 1.60 1.31 1.02 0.80 0.62 0.48 0.38 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 1671.69 613.67 225.28 82.70 4.09 1.50 0.55 0.20 30.36 11.14 876.43 57.93 9.47 1.55 335 340 354.33 143.27 3.83 0.63 0.25 23.43 340 345 404.78 173.17 74.10 1.07 31.71 13.58 5.81 2.49 0.46 0.20 39.47 7.95 345 350 196.08 87.98 0.72 17.71 3.57 1.60 0.32 0.14 4.09 350 355 1671.69 613.67 225.28 82.70 30.36 11.14 1.50 0.55 0.20 355 360 866.90 151.06 11.37 2.08 0.90 361.14 63.47 26.80 4.85 0.39 FIRST HARMONIC AMPLITUDE 31891.5313309.61 5696.21 2512.82 140.95 42.93 1148.60 546.52 271.52 76.31 1.99 1.65 1.80 PHASE 2.21 2.47 2.71 3.09 3.42 3.76 4.08 (IN HUURS SECOND HARMONIC 29.76 22548.89 9305.23 3939.62 1722.85 783.75 372.99 186.14 97.23 52.88 PHASE 1.69 2.03 1.84 2.26 2.52 2.80 3.09 3.38 3.67 3.94

31

IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

	10		D	-	_	
·)[w	K	м	•	

	GEOGRAPH	IC LATITE	JDE = 5		DGRAPHIC	LONGITUE	DE =	4.60		
ASY.LONG. BE	TA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
0 5	403.55		70.01	29.17	12.15	5.06	2.11	0.88	0.37	0.15
5 10 10 15	196.08	180.25 87.98	83.50 39.47	38.83 17.71	18.12	8.49	3.99	1.88	0.89	0.47
15 20	191.85	89.60	41.85	19.54	7.95	3.57 4.26	1.60	0.72	0.32	0.14
20 25		1497.31			105.38	43.61	18.07	7.50	3.12	1.30
25 30	1843.95	807.01	355.36		70.20	31.49	14.22	6.46	2.95	1.35
30 35	888.86		198.05	94.69	45.65	22.18	10.86	5.36	2.66	1.33
35 40	582.14	267.24	123.17	56.99	26.46	12.33	5.77	2.71	1.27	0.60
40 45	1476.24	671.19	310.07	145.58	69.45	33.65	16.54	8.24	4.15	2.12
45 50	985.19	446.48	205.10	95.66	45.36	21.89	10.76	5.38	2.74	1.42
50 55	1025.02		261.13	133.82	69.29	36.24	19.14	10.20	5.49	2.98
55 60		742.24	362.98	181.75	93.08	48.68	25.94	14.06	7.73	4.31
60 65	2315.19		536.92	272.01	142.51	77.02	42.78	24.32	14.09	8.29
65 70 70 75	1677.52	846.59		228.81	122.60	66.99	37.30	21.13	12:17	7.11
75 80	668.75 257.92	341.54 139.03	178.17	95·12 43·12	52.03	29.17	16.74	9.82	5.88	3.58
80 85	26.23	17.77	12.04	8.15	24.88	3.75	8.87	1.72	3.43	2.18
85 90	47.74	32.78	22.52	15.47	10.64	7.32	5.04	3.47	2.39	1.65
90 95	45.75	31.69	21.95	15.21	10.54	7.30	5.06	3.51	2.43	1.69
95 100	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
100 105	9,39	6.68	4.75	3.38	2.40	1.71	1.21	0.86	0.61	0.44
105 110	40.30	28.37	19.98	14.07	9.92	6.99	4.93	3.47	2.45	1.73
110 115	9.39	6.68	4.75	3.38	2.40	1.71	1.21	0.86	0.61	0.44
115 120	6.31	4.67	3.46	2.56	1.90	1.40	1.04	0.77	0.57	0.42
120 125	9.39	6.68	4.75	3.38	2.40	1.71	1.21	0.86	0.61	0.44
125 130	12.63	9.35	6.92	5.12	3.79	2.81	2.08	1.54	1.14	0.84
130 135 135 140	6.31	16.03	3.46	2.56 8.50	6.19	1.40	3.29	0.77	0.57	1.28
140 145	6.31	4.67	3.46	2.56	1.90	1.40	1.04	0.77	0.57	0.42
145 150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150 155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155 160	6.31	4.67	3.46	2.56	1.90	1.40	1.04	0.77	0.57	0.42
160 165	9.89	7.46	5.63	4.25	3.21	2.43	1.83	1.39	1.05	0.80
165 170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170 175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175 180 180 185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
185 190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190 195	3.58	2.79	2.17	1.69	1.31	0.0	0.0	0.0	0.0	0.0
195 200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200 205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205 210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210 215	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215 220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220 225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225 230	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
230 235 235 240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240 245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245 250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250 255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255 260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260 265	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
265 270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270 275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275 280 280 285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285 290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290 295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295 300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300 305	3,58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
305 310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315 320	3.58	2.79	2.17	1.69	1.31	1.02	0.30	0.62	0.48	0.38
320 325 325 330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330 335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335 340	876.43	354.33	143.27	57.93	23.43	9.47	3.83	1.55	0.63	0.25
340 345	404.78	173.17	74.10	31.71	13.58	5.81	2.49	1.07	0.46	0.20
345 350	196.08	87.98	39.47	17.71	7.95	3.57	1.60	0.72	0.32	0.14
350 355	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355 360	866.96	361.14	151.06	63.47	26.80	11.37	4.85	2.08	0.90	0.39
FIRST HARMON		0/10 10	20/1 2/		00.		212 2		**	
PHASE	18563.35		2.49	2.67	924.34	467.27	3.37	131.36	73.03	41.82
(IN HOURS)	2.20	2.55	2.77	2.0/	2.88	3.12	3.31	3,04	3172	4.20
SECOND HARMO	NIC									
AMPLITUDE	13460.16	6137.09	2858.79	1365 - 12	670.22	339.03	176.82	95.03	52.53	29.80
PHASE	2.28	2.41	2.56	2.73	2.92	3.13	3.35	3.57	3.79	4.02
(IN HOURS)	ulr rue									
THE UPPER LI	MIT FUR I	413 CALCO	JEAT TUN I	5 111.25	GV					

GEOGRAPHIC LATITUDE = 50.10 GEOGRAPHIC LONGITUDE = 4.60 ASY.LUNG./BETA: +1.6 +1.2 +1.4 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 35.96 15.16 202.23 85.28 6.39 2.70 0.20 0.00 5 390.61 180.25 83.50 18.12 8.49 3.99 1.88 0.89 38.83 0.42 10 196,08 87.98 39.47 17.71 7.95 3.57 1.60 0.72 0.32 0.14 191.85 89.60 41.85 19.54 9.13 1.99 0.93 20 4.25 0.43 434.31 81.14 35.10 15.19 2.85 20 25 1005.63 187.67 6.58 1.24 25 30 1168.83 535.47 246.14 113.52 52.53 11.36 5.31 2.49 1.17 24.39 30 1.26 35 687.55 334.97 164.00 80.69 39.89 19.81 9.89 4.95 2.49 35 5.77 40 582.14 267.24 123.17 56.99 26.46 12.33 2.71 1.27 0.60 40 399.65 45 1.93 801,12 200,86 101.65 51.79 26.54 13.68 7.09 3.69 45 171.05 50 783.88 363.69 81.65 39.60 19.52 9.78 4.98 2.58 1.35 1025.02 50 514.78 55 19.14 261.13 253.76 133.82 69.29 36.24 10.20 5.49 2.98 879.47 23.09 60 137.82 75.41 41.57 12.91 7.27 4.12 359.61 37.97 60 65 1237.44 659.60 7.97 200.08 113.32 65.17 22.37 13.30 65 435.71 70 1677.52 37.30 846.59 66.99 21.13 7.11 228.81 122.60 12.17 95.12 75 668.75 341.54 178.17 52.03 29.17 16.74 9.82 5.88 3.58 80 257.92 76.54 8.87 5.47 139.03 14.69 3.43 2.18 43.12 24.88 80 85 26.23 17.77 12.04 2.54 1.72 1.17 0.79 8.15 5.53 85 90 47.74 32.78 22.52 7.32 5.04 3.47 2.39 10.64 1.65 15.47 90 95 45.75 21.95 3.51 31.69 15.21 10.54 7.30 5.06 2.43 1.69 0.0 95 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 100 105 9.39 4.75 0.86 6.68 3.38 2.40 1.71 1.21 0.61 105 110 19.98 4.93 40.30 28.37 14.07 9.92 6.99 3.47 2.45 1.73 110 115 9.39 4.75 1.21 0.86 0.61 6.68 3.38 2.40 1.71 0.44 3.46 4.75 6.92 1.40 0.42 115 120 6.31 4.67 1.90 1.04 0.77 0.57 120 125 9.39 6.68 3.38 2.40 1.71 1.21 0.86 0.61 0.44 125 130 12.63 9.35 5.12 3.79 2.81 2.08 1.54 1.14 0.84 130 135 6.31 4.67 3.46 2.56 1.90 1.40 1.04 0.77 0.57 0.42 135 140 22.02 16.03 11.67 8.50 6.19 4.51 3.29 2.40 1.75 1.28 140 145 6.31 1.04 0.57 4.67 3.46 2.56 1.90 1.40 0.42 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.0 0.0 0.0 155 4.67 3.46 1.90 1.40 1.04 0.77 0.57 160 6.31 2.56 0.42 160 165 9.89 7.46 5.63 2.43 1.83 1.39 1.05 3.21 0.80 4.25 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 2.17 1.69 190 195 3.58 1.02 0.80 0.48 0.38 1.31 0.62 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 2.79 2.17 1.69 3.58 0.80 1.31 1.02 0.62 0.48 0.38 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 3.58 2.79 2.17 1.69 1.02 0.80 0.62 0.48 0.38 1.31 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 300 305 2.17 1.69 0.48 3.58 1.31 1.02 0.80 0.62 0.38 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 2.17 1.69 0.48 315 320 3.58 0.80 1.02 0.62 0.38 1.31 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 404.78 173.17 2.49 74.10 31.71 13.58 5.81 1.07 0.46 0.20 39.47 345 350 196.09 87.98 7.95 3.57 1.60 0.72 0.32 17.71 0.14 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 191.85 89.60 41.85 19.54 9.13 4.26 1.99 0.93 0.43 0.20 FIRST HARMUNIC 11615.91 5686.69 2834.75 AMPLITUDE 1441.55 749.07 398.24 216.80 120.87 68.99 40.27 2.90 PHASE 2.63 4.09 2.76 3.06 3.23 3.43 3.64 3.86 4.32 (IN HOURS) SECOND HARMONIC 8801.22 4323.24 2161.08 1100.85 90.81 29.41 572.05 51.19 303.43 164.31 PHASE 2.71 2.95 2.82 3.39 3.92 3.09 3.56 3.74 4.11 3.24

DOURBES

(IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 80.00 GV

GEOGRAPHIC LATITUDE = 50.10 GEOGRAPHIC LONGITUDE = 4.60 ASY.LUNG. BETA: +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 188.07 92.36 45.36 22.28 10.94 5.37 1.30 0.31 2.64 10 0.64 15 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15 191.85 1.99 89.60 41.85 19.54 9.13 0.93 0.43 0.20 20 4.26 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.71 25 567.98 274.33 132.57 7.27 30 64.10 31.01 3.52 0.83 15.01 491.47 246.99 30 124.53 62.98 31.94 8.29 4.24 2.17 1.12 16.25 35 379.91 181.96 87.21 4.63 1.07 41.82 20.07 9.64 2.23 3.44 40 45 598.58 311.76 162.72 23.43 12.33 6.50 1.82 85.10 44.60 45 50 183.02 102.55 57.48 18.08 10.15 5.70 3.20 1.80 1.01 32.23 426.80 61.34 2.83 50 55 828,94 221.66 116.11 32.67 17.54 9.49 5.17 55 60 879.47 470.70 253.76 137.82 75.41 41.57 23.09 12.91 7.27 4.12 60 65 832.67 486.43 285.51 168.37 99.75 59.36 35.48 21.30 12.84 7.77 65 1076.67 70 585.45 322.14 179.39 101.08 57.62 33.21 19.35 11.39 6.77 5.56 70 75 472.67 138.70 9.11 3.43 253.57 77.41 44.09 25.60 15.14 75 257.92 139.03 76.54 5.47 3.43 8.87 80 43.12 24.88 14.69 2.18 80 26.23 12.04 2.54 85 17.77 8 . 15 5.53 7.32 1.17 0.79 85 5.04 3.47 2.39 90 22.52 32.78 10.64 1.65 15.47 45.75 21.95 3.51 90 95 15.21 10.54 5.06 2.43 1.69 31.69 7.30 95 100 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.75 100 105 9.39 6.68 3.38 2.40 1.71 1.21 0.86 0.61 0.44 6.99 40.30 1.73 105 19.98 9.92 4.93 110 28.37 14.07 3.47 2.45 110 9.39 +.75 1.21 0.86 0.61 115 6.68 3.38 2.40 1.71 0.44 3.46 1.90 6.31 115 1.04 0.77 0.57 0.42 150 4.67 1.40 120 125 9.39 6.68 3.38 2.40 1.71 1.21 0.86 0.61 0.44 6.92 3.79 125 130 12.63 9.35 5.12 2.81 2.08 1.54 1.14 0.84 0.77 0.57 130 135 6.31 4.67 3.46 2.56 1.90 1.40 1.04 0.42 1.75 2.40 3.29 135 140 22.02 16.03 11.67 8.50 6.19 4.51 1.28 140 145 6.31 4.67 3.46 2.56 1.90 1.40 1.04 0.42 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 155 6.31 4.67 1.90 1.40 1.04 0.77 0.57 160 3.46 2.56 0.42 160 165 9.89 7.46 5.63 3.21 2.43 1.83 1.39 1.05 0.80 4.25 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 0.0 0.0 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.31 2.79 1.69 190 195 3.58 2.17 1.02 0.80 0.62 0.48 0.38 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.79 2.17 0.80 0.48 0.38 225 230 1.69 0.62 3.58 1.31 1.02 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.69 3.58 0.30 260 265 2.79 2.17 1.31 1.02 0.62 0.48 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 2.79 2.17 0.38 3.58 1.69 1.31 1.02 0.80 0.6 0.48 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.48 3.58 2.79 2.17 1.69 0.80 0.62 0.38 1.31 1.02 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 191.85 355 360 89.60 41.85 19.54 9.13 4.26 1.99 0.93 0.43 0.20 FIRST HARMONIC AMPLITUDE 6885.95 3647.68 1957.09 1064.53 587.52 329.24 187.43 108.42 63.74 38.07 3.17 PHASE 3.26 3.37 3.49 3.62 3.77 4.11 4.29 4.49 IN HOURS SECOND HARMONIC AMPLITUDE 5698.06 3015.87 1613.93 873.73 478.73 265.56 149.19 84.89 48.94 28.59 PHASE 3.18 3.26 3.35 3.45 3.55 3.79 3.93 4.08 4.23 (IN HOURS

DOURBES

34

50.00 GV

THE UPPER LIMIT FOR THIS CALCULATION IS

		0.511.00.1.0.1.1		DOURBE							
ASY.L	DNG.	BETA: +1.6	+1.4	+1.2	0.10 GE +1.0	OGRAPHIC +0.8	+0.6	DE = +0.4	+0.2	0.0	-0.2
0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 30	30 35	299.62	0.0	0.0	0.0	0.0	0.0	6.30	0.0	0.0	0.0
35	40	0.0	0.0	82.68	0.0	0.0	11.98	0.0	3.31 0.0	0.0	0.91
40	45	410.51		117.36	62.83	33.66	18.05	9.69	5.21	2.80	1.51
45 50	50	183.02	102.55		32.23	18.08	10.15	5.70 13.56		1.80	1.01
55	60	445.24 503.34		137.97	77.02 93.27	43.09 53.53	24.15 30.83	17.81	7.63	6.00	3.50
60	65	832.67	486.43	285.51	168.37	99.75	59.36	35.48	21.30	12.84	7.77
70	70 75	696.76 280.83		234.94		81.01	47.98	28.58	17.12 8.18	10.32	3.23
75	80	69.85	163.97	96.86	57.87 20.84	34.96 13.94	9.32	13.15	4.17	5.12	1.87
80	85	26.23	17.77	12.04	8.15	5.53	3.75	2.54	1.72	1.17	0.79
90	90	47.74	32.78	22.52	15.47	10.64	7.32	5.04	3.47	2.39	1.65
	100	0.0	31.69	0.0	0.0	0.0	7.30	0.0	0.0	0.0	0.0
100	105	9.39	6.68	4.75	3.38	2.40	1.71	1.21		0.51	0.44
105		40.30	28.37	19.98	14.07	9.92	6.99	4.93	3.47	2.45	1.73
110		9.39	6.68	3.46	3.38	1.90	1.71	1.04	0.86	0.61	0.44
120	125	9.39	6.68	4.75	3.38	2.40	1.71	1.21	0.86	0.61	0.44
125		12.63	9.35	6.92	5.12	3.79	2.81	2.08		1.14	0.84
130		6.31 22.02	4.67	3.46	2.56 8.50	1.90 6.19	1.40	3.29	2.40	0.57	1.28
140	145	6.31	4.67	3.46	2.56	1.90	1.40	1.04	0.77	0.57	0.42
145		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155		0.0 6.31	0.0 4.67	3.46	2.56	1.90	1.40	1.04	0.77	0.0	0.0
160	165	9.89	7.40	5.63	4.25	3.21	2.43	1.83	1.39	1.05	0.80
165		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180	185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
185		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190		3.58	0.0	2.17	0.0	0.0	0.0	0.80	0.62	0.48	0.38
200		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225		3.56	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
235	235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240	245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250 255		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	265	3.58		2.17	1.69	1.31	1.02	0.80		0.48	
265		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270 275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280	285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	305	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
305		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315		3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
320	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335	340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		MUNIC									
AMPLI		3793.41	2174.34		730.87	4.04	254.06	151.84	91.62	55.83	34.36
(IN F			3.11	,,0,	,,,,	4.04	4.15		1	4.70	
		RMONIC		.150.15							
AMPL		3416.41			3.82	368.87	3.98	125.84	74.28	44.18	4.42
(IN F	OURS						,. 40			11	1.12
THE	PPER	LIMIT FOR TH	IS CALC	JLATION I	5 29.00	GV					

JUNGFRAUJOCH GEOGRAPHIC LATITUDE = 46.55 GEOGRAPHIC LONGITUDE = 7.98 ASY. LONG . / BETA = +1.2 +1.0 +1.6 +1.4 +0.8 +0.4 +0.2 0.0 -0.2 +0.6 0 3119,53 1107.52 398.36 145.40 53.94 7.83 3.07 1.22 0.50 20.36 5136.99 1603.83 508.11 55.32 7.73 10 164.64 19.73 1.79 1.00 3.45 10 15 9431.78 3008.48 964.59 101.06 10.95 3.66 1.24 0.43 311.12 33.10 . 5 20 17669.75 5753.10 1893.12 630.72 213.21 73.32 25.73 9.24 3.41 1.29 707.38 0.98 20 25 4861.12 1850.86 271.49 104.69 15.82 6.21 2.45 40.58 25 1.13 30 3952.76 1566.91 624.10 249.76 100.42 40.57 16.46 6.71 2.75 1864.90 30 35 801.29 345.94 150.10 65.47 28.71 12.66 5.61 2.50 1.12 7909.75 2610.54 35 884.27 112.79 40 309.58 42.99 17.18 7.19 3.13 1.41 2396.66 959.69 40 391.09 68.91 45 162.49 29.85 13.21 5.96 2.74 1.28 45 732.87 333.21 3.96 1634.52 153.70 8.02 50 71.94 34.16 16.44 1.95 2.71 50 55 1574.67 298.29 131.75 5.71 1.31 682.30 58.87 12.24 26.65 874.99 55 7767.80 2564.98 117.94 20.53 9.53 4.64 60 312.15 47.64 2.35 60 65 2537.27 1050.28 448.38 198.16 90.86 21.29 10.82 5.64 3.01 43.22 65 70 2113.78 940.06 424.43 194.92 91.21 21.22 10.56 5.36 7.78 43.54 1155.02 70 75 582.77 297.60 153.91 80.65 23.04 12.55 6.92 3.86 42.82 15 838.29 250.73 7.93 80 456.91 138.54 77.09 43.20 24.38 13.86 4.57 85 88.91 4.74 2.94 80 242.30 146.52 54.13 33.07 12.45 7.68 20.26 90 85 81.83 50.89 4.93 213.37 131.94 31.74 19.85 12.44 7.82 3.11 90 95 181.97 74.75 12.89 116.52 48.04 30.93 19.95 8.34 5.41 22.64 6.27 95 100 53.38 34.76 4.09 1.74 14.75 9.62 2.67 8.45 3.79 100 105 63.04 42.15 28.19 18.86 12.62 5.66 2.54 32.00 105 110 21.39 14.29 9.55 2.85 1.91 1.27 0.84 6.38 4.27 0.74 6.98 2.27 110 115 10.14 4.80 3.30 1.56 1.07 0.5 115 28,58 120 60.28 41.49 19.69 13.57 9.36 6.46 4.46 3.08 2.13 6.98 120 125 14.75 10.14 4.80 3.30 2.27 1.56 1.07 0.74 0.51 13.95 125 130 20.28 9.59 6.60 4.54 3.12 2.15 1.48 1.00 1.91 0.97 130 135 14.79 10.52 7.48 3.78 5.32 2.69 1.36 0.69 135 0.0 0.0 0.0 0.0 0.0 140 0.0 0.0 0.0 0.0 0.0 140 0.0 0.0 0.0 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 45 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 29,53 14.45 50 7.08 3.47 2.43 1.70 1.19 155 20.66 10.11 4.96 155 29.57 3.82 1.93 1.37 7.56 160 5.38 21.03 10.63 0.0 160 0.0 0.0 0.0 0.0 0.0 0.0 165 0.0 0.0 0.0 14.07 165 170 26.8 19.42 3.89 2.82 2.05 1.49 10.20 7.39 5.36 14.79 7.48 0.97 170 175 3.78 1.91 1.36 0.69 10.52 5.37 2.69 175 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 90 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 14,70 7,48 1.91 0.97 200 10.52 5.32 3.78 2.69 1.36 0.69 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.47 205 210 12.03 2.67 1.98 1.08 0.80 4.88 3.61 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.59 1.47 220 225 12.03 8.91 4.88 3.61 2.67 1.98 1.08 0.80 0.0 225 230 0.0 0.0 $0 \star 0$ 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 0.0 0.0 0.0 235 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 0.0 0.0 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 0.40 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 0.0 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 0.0 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 0.0 310 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 0.0 0.0 0.0 0.0 320 0.0 0.0 0.0 0.0 0.0 320 0.0 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 0.0 0.0 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 4718.88 1425.81 431.08 130.41 39.48 3.62 1.10 0.33 0.10 11.96 3918.88 471.93 335 340 1358.18 57.88 57.43 7.06 2.49 0.88 0.31 20.11 345 875.43 353.95 143.12 23.41 9.47 3.83 1.55 0.63 0.25 345 350 2602.23 792.52 244.37 76.58 24.49 8.03 2.71 0.94 0.34 0.13 350 355 9494.75 2979.33 939.43 297.98 95.21 1.11 30.70 10.01 3.31 0.38 355 360 700.24 1863.04 264.38 100.34 38.31 14.72 5.70 2.23 0.88 FIRST HARMONIC AMPLITUDE 88145.8830579.6910905.08 4050.97 1581.38 292.46 39.81 656.28 72.55 PHASE 0.79 0.96 1.19 1.50 1.90 2.39 2.95 3.55 4.69 IN HOURS SECOND HARMONIC 63434.6621332.66 7320.22 2583.15 0.71 0.86 1.07 1.34 75.7R 38.98 950.70 373.16 160.08 21.21 PHASE 1.70 2.15 2.68 3.21 3.70 4.11

36

IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

JUNGFRAUJOCH GEOGRAPHIC LATITUDE = 46.55 GEOGRAPHIC LONGITUDE = 7.98 ASY. LONG. BETA = +1.0 +0.4 +0.2 +1.4 +0.8 +0.6 0.0 -0.2 0 5 863.61 359.80 150.53 63.26 26.71 11.34 4.84 2.07 0.89 0.39 4.10 418.11 178.02 77.03 34.22 15.84 7.77 2.35 0.96 10 1.45 10 87.25 0.58 15 201.07 37.86 16.43 7.13 3.09 1.34 0.25 0.11 79.80 20 3720.16 1406.06 535.31 205.60 31.36 12.50 5.06 2.08 0.87 707.38 4861.12 15.82 20 6.21 271.49 104.69 2.45 25 850.86 40.58 0.98 624.10 30 566.91 100.42 16.46 40.57 1.13 30 1864.99 345.94 65.47 5.61 35 801.29 28.71 2.50 150.10 12.66 1.12 2.47 205.37 46.09 35 934.96 437.02 40 97.03 22.01 10.56 5.10 1.20 40 45 2396,66 959.69 391.09 68.91 29.85 13.21 5.96 2.74 162.49 1.28 45 50 1634.52 732.87 333.21 153.70 71.94 34.16 16.44 8.02 3.96 1.98 50 1574.67 5.71 682.30 298.29 131.75 58.87 26.65 12.24 2.71 1.3 793.10 55 60 391.46 196.09 99.60 51.23 26.66 14.72 7.44 3.98 2.14 60 65 2537.27 1050.28 448.38 198.16 90.86 43.22 21.29 10.82 5.64 3.01 65 70 2113.78 940.06 424.43 91.21 10.56 2.78 194.92 43.54 21.22 5.36 75 70 1155.02 582.77 297.60 153.91 80.65 42.82 23.04 12.55 6.92 3.86 75 13.86 4.57 80 838.29 456.91 250.73 77.09 43.20 24.38 7.93 138-54 88.91 80 85 242.30 146.52 54.13 33.07 20.26 12.45 7.68 4.74 2.94 81.83 85 4.93 90 213.37 131.94 50.89 31.74 19.85 12.44 7.82 3.11 90 95 181.97 116.52 48.04 30.93 19.95 12.89 8.34 5.41 3.51 95 1.74 100 34.76 22.64 4.09 53.38 2.67 14.75 9.62 6.27 1.14 100 2.54 5.66 105 63.04 28.19 1.70 42.15 18.86 12.62 8.45 1.91 32.00 1.27 105 2.85 14.29 0.85 110 21.39 9.55 6.38 4.27 6.98 0.51 110 115 10.14 4.80 3.30 2.27 1.56 115 9.36 60.28 41.49 28.58 13.57 6.46 4.46 3.08 120 19.69 2.13 6.98 1.07 120 125 14.75 10.14 4.80 3.30 2.27 1.56 0.74 0.51 13.95 125 29.50 130 20.28 9.59 6.60 4.54 3.12 2.15 1.48 1.02 130 135 1.91 0.97 14.79 10.52 7.48 5.32 3.78 2.69 1.36 0.69 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 0.0 0.0 0.0 0.0 145 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 155 14.45 150 3.47 29.53 20.66 7.08 4.96 2.43 1.70 1.19 10.11 155 160 29.57 7.56 5.38 3.82 2.72 1.93 1.37 21.03 10.63 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7.39 2.82 2.05 1.49 165 170 26.82 14.07 3.89 19.42 10.20 5.36 170 175 14.79 7.48 2.69 1.91 0.97 10.52 5.32 3.78 1.36 0.69 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 14.79 2.69 1.91 0.97 10.52 7.48 5.32 3.78 1.36 0.69 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 6.59 1.98 2.67 1.47 1.08 0.80 12.03 8.91 4.88 3.61 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 6.59 4.88 2.67 1.98 1.47 1.08 0.80 12.03 8.91 3.61 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 1662.96 610.47 224.10 82.27 11.09 4.07 1.49 0.55 0.20 30.20 1.55 340 345 875.43 353.95 143.12 57.88 23.41 9.47 3.83 0.63 0.25 345 350 85.28 87.25 35.96 37.86 0.48 202.24 15.16 6.39 2.70 1.14 0.20 0.09 350 355 201.07 16.43 7.13 3.09 1.34 0.25 0.11 355 360 5.70 700.24 2.23 1863.04 264.38 100.34 38.31 14.72 0.88 0.35 FIRST HARMONIC 31676.4313136.01 39.11 5573.66 2431.84 252.43 129.65 69.71 1097.21 514.84 3.93 PHASE 2.08 2.35 4.39 1.68 3.48 4.84 1.86 2.68 3.06 (IN HOURS SECOND HARMONIC 22515.90 9127.58 3771.42 1597.83 76.50 599.43 318.94 152.45 40.12 21.81 PHASE 1.66 1.81 2.01 2.25 2.53 2.85 3.20 3.55 3.90 4.22 IN HOURS

THE UPPER LIMIT FUR THIS CALCULATION IS 188.75 GV

GEOGRAPHIC LATITUDE = 46.55 GEOGRAPHIC LONGITUDE = 7.98 ASY.LUNG. BETA - 1.6 +1.4 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 0 863.61 359.80 150.53 4.84 63.26 26.71 0.39 11.34 2.07 0.89 77.03 15.84 10 418.11 178.02 7.77 4.10 2.35 0.25 0.96 34.22 16.43 10 201.07 7.13 3.09 0.11 185.12 1 5 20 394.24 87.11 4.36 2.07 41.07 19.40 9.19 0.99 0.47 20 1535,20 259.18 629.93 106.96 44.29 18.41 7.68 3.22 1.35 0.57 25 30 2289.80 956.44 399.99 167.49 70.22 29.48 12.39 5.22 2.20 0.93 30 35 1864.99 801.29 345.94 150.10 12.66 2.50 65.47 28.71 5.61 1.12 35 40 934.96 437.02 205.37 97.03 46.09 10.56 2.47 1.2 22.01 5.10 40 733.70 349.22 166.99 80.22 38.71 9.14 18.77 4.47 2.19 1.98 45 50 1634.52 732.87 333.21 153.70 71.94 34.16 16.44 8.02 3.96 50 793.10 298.29 58.87 1.31 55 682.30 131.75 26.65 12.24 5.71 2.71 55 196.09 60 391.46 99.60 51.23 26.66 14.02 7.44 3.98 874.31 439.81 224.28 2.81 60 65 115.90 60.66 32.13 17.22 9.32 5.10 65 2113.78 940.06 70 194.92 91.21 424.43 43.54 21.22 10.56 5.36 70 75 1155.02 297.60 6.92 582.77 23.04 12.55 153.91 80.65 42.82 3.86 77.09 75 838.29 250.73 456.91 7.93 4.57 80 138.54 43.20 24.38 13.86 2.94 85 242.30 146.52 88.91 33.07 54.13 7.68 4.74 20.25 90 213.37 131.94 81.83 50.89 31.74 19.85 12.44 7.82 4.93 3.11 5.41 90 95 181.97 116.52 74.75 48.04 30.93 12.89 3.51 19.95 8.34 95 100 53,38 22.64 14.75 4.09 2.67 34.76 9.62 6.27 1.14 3.79 100 105 63.04 28.19 18.86 12.62 5.66 2.54 1.70 42.15 8.45 1.27 105 32.00 21.39 14.29 4.27 2.85 1.91 0.85 110 9.55 6.38 110 14.75 10.14 6.98 4.80 3.30 2.27 1.56 1.07 0.51 115 120 60.28 28.58 6.46 3.08 41.49 19.69 13.57 9.36 2.13 4.46 120 14.75 6.98 3.30 1.56 1.07 125 10.14 4 - 80 2.27 0.74 0.5 29,50 125 130 20.28 13,95 9.59 6.60 4.54 3.12 2.15 1.48 7.48 130 135 14.79 10.52 5.32 3.78 1.91 1.36 0.97 2.69 0.69 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.70 1.93 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.45 3.47 29.53 150 155 20.66 10.11 7.08 4.96 2.43 1.19 55 160 1.37 21.03 10.63 5.38 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.05 2.82 165 170 26.82 19.42 14.07 10.20 7.39 3.89 1.49 5.36 170 175 14.79 7.48 1.91 1.36 0.97 10.52 5.37 3.78 0.69 2.69 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 14.79 1.91 0.97 0.69 10.52 7.45 5.32 3.78 2.69 1.36 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 12.03 8.91 6.59 4.88 1.98 1.47 1.08 0.80 3.61 2.67 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.59 220 225 1.98 12.03 8.91 4.88 3.61 2.67 1.47 1.08 0.80 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 0.0 0.0 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 0.0 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 0.0 0.0 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 143.12 1.55 340 875.43 353.95 3.83 345 57.88 9.47 0.25 23.41 0.63 0.48 6.39 0.20 345 350 202.24 85.28 15.16 1.14 0.09 87.25 350 355 37.86 1.34 16.43 3.09 0.25 0.11 355 360 200.08 89.77 40.28 18.07 8.11 1.63 0.73 0.33 0.15 3.54 FIRST HARMONIC 18365.04 8320.02 3842.63 AMPLITUDE 880.58 440.01 121.32 67.05 38.28 PHASE 2.28 2.45 2.65 2.89 3.17 4.22 4.50 4.99 1.47 IN HOURS SECOND HARMUNIC 13152.85 5877.22 2671.31 1239.48 589.36 288.17 75.42 40.31 22.08 PHASE 3.53 2.61 2.80 2.29 2.44 3.03 3.80 4.33 4.07

JUNGFRAUJOCH

38

(IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

		CCCCDADO		JUNGF				nr.	~ 00		
ASY.LI	DNG. /R	GEOGRAPH:	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	7.98	0.0	-0.7
					****	****				•••	0.7
0	5	192.02	89.68	41.89	19.56	9.14	4.27	1.99	0.93	0.43	0.20
5	10	214.27	94.19	42.56	20.05	10.01	5.37	3.12	1.94	1.29	0.89
10	15	201.07	87.25	37.86	16.43	7.13	3.09	1.34	0.58	0.25	0.11
15	20	394.24	185.12	87.11	41.07	19.40	9.19	4.36	2.07	0.99	0.47
20	25	192.02	89.68	41.89	19.56	9.14	4.27	1.99	0.93	0.43	0.20
30	30 35	989.56	434.83		81.26	35.15	15.22	6.59	2.86	1.24	0.54
35	40	934.96	447.33	202.81	92.23	42.06	19.24	10.56	5.10	2.47	1.20
40	45	733.70	349.22	166.99	80.22	38.71	18.77	9.14	4.47	2.19	1.08
45	50	759.09	378.92	190.09	95.82	48.53	24.69	12.51	6.47	3.33	1.72
50	55	903.08	412.18	189.64	88.05	41.30	19.58	9.40	4.57	2.25	1.12
55	60	589.26	307.63		85.42	45.40	24.26	13.03	7.03	3.81	2.07
60	65	874.31	439.81	224.28	115.90	60.66	32.13	17.22	9.32	5.10	2.81
65	70	1238.35	586.11	281.31	137.04	67.80	34.07	17.39	9.01	4.74	2.52
70	75	1155.02	582.77		153.91	80.65	42.82	23.04	12.55	6.92	3.86
75	80	838.29		250.73	138.54	77.09	43.20	24.38	13.86	7.93	4.57
80	85	242.30	146.52	88.91	54.13	33.07	20.26	12.45	7.68	4.74	2.94
85 90	90 95	213.37	131.94	81.83	50.89	31.74	19.85	12.44	7.82 8.34	4.93	3.11
	100	53.38	34.76	74.75	48.04	30.93	19.95	12.89	2.67	5.41	3.51
	105	63.04	42.15	28.19	14.75	9.62	8.45	5.66	3.79	2.54	1.70
	110	32.00	21.39	14.29	9.55	6.38	4.27	2.85	1.91	1.27	0.85
	115	14.75	10.14	6.98	4.80	3.30	2.27	1.56	1.07	0.74	0.51
115	120	60.28	41.49	28.58	19.69	13.57	9.36	5.46	4.46	3.08	2.13
120	125	14.75	10.14	6.98	4.80	3.30	2.27	1.56	1.07	0.74	0.51
	130	29.50	20.28	13.95	9.59	6.60	4.54	3.12	2.15	1.48	1.02
	135	14.79	10.52	7.48	5.32	3.78	2.69	1.91	1.36	0.97	0.69
	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	145 150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	155	29.53	20.66	14.45	10.11	7.08	4.96	3.47	2.43	1.70	1.19
	150	29.57	21.03	14.95	10.63	7.56	5.38	3.82	2.72	1.93	1.37
160	165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	170	26.82	19.42	14.07	10.20	7.39	5.36	3.89	2.82	2.05	1.49
	175	14.79		7.48	5.32	3.78	2.69	1.91	1.36	0.97	0.69
	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	200	14.79	10.52	7.48	5.32	3.78	2.69	1.91	1.36	0.97	0.69
	205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	210	12.03	8.91	6.59	4.88	3.61	2.67	1.98	1.47	1.08	0.80
210	215	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220		12.03	8.91	5.59	4.88	3.61	2.67	1.98	1.47	1.08	0.80
	230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	265	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
765		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345		202.24	85.28 87.25	35.96	15.16	6.39	2.70	1.14	0.48	0.20	0.09
355		200.08	89.77	40.28	18.07	7.13	3.09	1.63	0.73	0.25	0.11
	HARME		87.11	40.00	10.07	9.1	3.04			0.33	0.15
MPLI		11450.04	5562.75	2748.98	1384.76	712.54	\$75.22	202.51	112.12	63.67	37.07
PHA		2.81			3.38	3.63	3.90	4.19	4.50	4.83	5.16
IN H											
	D HARM										
	TUDE		4076.34		987.89	499.44		135.36	72.58	39.63	22.00
		2.80	2.93	3.08	3.25	3.43	3.62	1.83	4.04	4.75	4.47
PHA	-	5.00	2.4.2	3,00	1.23	3.43	3.02			4.12	

JUNGFRAUJOCH

39

JUNGFRAUJOCH GEOGRAPHIC LATITUDE = 46.55 GEDGRAPHIC LONGITUDE = 7.98 ASY.LONG. BETA: +1.6 +1.2 +0.2 +1.4 +1.0 +0.8 +0.5 +0.4 0.0 -0.2 192.02 89.68 41.89 1.99 0.93 19.56 0.20 9.14 4.27 0.43 1.98 10 12.03 8.91 5.59 1.08 0.80 4.88 1.47 3.61 2.67 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 194.16 15 95.36 46.83 20 23.00 11.30 5.55 2.72 1.34 0.32 0.66 0.93 20 25 192.02 89.68 41.89 19.56 9.14 4.27 1.99 0.43 0.20 25 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185.04 4.72 30 35 386.18 88.72 42.56 20.43 9.81 2.27 1.09 0.53 35 40 532.64 261.97 129.13 63.79 31.58 7.79 3.89 1.94 0.97 15.67 40 45 532.64 261.97 129.13 63.79 31.58 15.67 7.79 3.89 1.94 0.97 45 50 559.01 289.15 149.81 77.75 40.42 21.05 10.98 5.74 3.00 1.57 299.70 55 50 149.88 75.55 38.39 19.66 10.16 5.29 2.77 1.47 0.78 55 589.26 161.61 7.03 60 307.63 85.42 45.40 24.26 13.03 3.81 2.07 60 672.07 354.53 188.32 129.35 65 100.73 54.26 29.44 16.08 8.84 4.89 2.72 70 433.90 236.56 21.55 3.70 70.95 39.04 11.94 6.63 2.07 6.59 70 75 954.94 453.00 257.32 21.40 3.71 135.84 72.54 39.18 11.82 80 838.29 456.91 250.73 7.93 4.57 138.54 77.09 43.20 13.86 80 88.91 2.94 85 242.30 54.13 33.07 4.74 146.52 20.26 12.45 7.68 85 81.83 74.75 4.93 90 213.37 131.94 7.82 50.89 12.44 31.74 19.85 3.11 90 95 30.93 12.89 181.97 116.52 3.51 48.04 8.34 5.41 19.95 95 100 1.74 53.38 22.64 4.09 34.76 6.27 2.67 14.75 9.62 1.14 100 105 63.04 28.19 5.66 3.79 42.15 18.86 12.62 8.45 2.54 1.91 105 110 32.00 21.39 14.29 9.55 6.38 4.27 2.85 1.27 0.85 110 0.74 115 14.75 6.98 2.27 1.56 1.07 0.5 10.14 4.80 3.30 6.46 4.46 2.13 115 120 60.28 41.49 28.58 19.69 13.57 9.36 3.08 6.98 120 125 125 130 1.56 0.74 14.75 10.14 4.80 3.30 2.27 1.07 0.51 29.50 20.28 9.59 6.60 4.54 3.12 2.15 1.48 1.02 130 135 14.79 10.52 7.48 5.32 3.78 2.69 1.91 1.36 0.97 0.69 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 14.45 155 29.53 150 1.19 20.66 10.11 7.08 4.95 3.47 2.43 1.70 2.72 1.93 155 29.57 3.82 160 1.37 21.03 10.63 7.56 5.38 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7.39 2.05 1.49 165 170 26.82 14.07 3.89 19.42 10.20 5.35 2.82 0.97 170 175 14.79 10.52 7.48 3.78 1.91 1.36 0.69 5.32 2.69 75 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 85 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 14.79 10.52 7.48 5.32 3.78 2.69 1.91 1.36 0.97 0.69 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 12.03 8.91 6.59 4.88 1.98 1.47 1.08 2.67 0.80 3.6 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 12.03 4.88 1.98 1.47 220 225 8.91 6.59 1.08 0.8 3.61 2.67 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 270 275 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 0.0 0.0 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 6699.71 309.74 AMPLITUDE 3526.43 1879.24 1015.07 175.30 100.93 59.12 35.24 556.36 3.79 PHASE 3.49 5.39 3.63 3.96 5.12 4.16 4.37 4.51 4.86 (IN HOURS SECOND HARMONIC 5277.93 2747.94 1444.52 AMPLITUDE 67.97 767.13 411.75 223.43 122.57 38.08 21.53

40

3.88

4.02

4.17

4.33

4.49

4.66

3.75

PHASE

3.41 3.52

(IN HOURS)
THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

3.63

		EDGRAPHI		JUNGFR JDE = 4	6.55 GE	DGRAPHIC	LONGITU	DE =	7.98		
SY.L	ONG. BETA	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.
0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10	12.03	8.91	6.59	4.88	3.61	2.67	1.98	1.47	1.08	0.8
10	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 35	40	0.0	76.94	40.42	21.23	0.0	0.0	3.08	0.0	0.0	0.0
40	45	146.46	76.94	40.42	21.23	11.15	5.86	3.08	1.62	0.85	0.4
45	50	364.85	193.79	102.98	54.75	29.13	15.50	8.26	4.40	2.35	1.2
50	55	107.68	60.20	33.66	18.82	10.53	5.89	3.29	1.84	1.03	0.5
55 60	60	397.24	163.82	94.66	65.85	36.27 31.67	18.34	11.04	6.17	3.38	1.8
65	70	433.90	236.56		70.95	39.04	21.55	11.94	6.63	3.70	2.0
70	75	376.74	218.28	126.72	73.72	42.97	25.10	14.69	8.62	5.07	2.9
75 80	80 85	644.13	361.55	203.90 88.91	115.54 54.13	65.80	37.66	12.45	7.68	7.27	2.9
85	90	213.37	131.94	81.83	50.89	31.74	19.85	12.44	7.82	4.93	3.1
90	95	181.97	116.52	74.75	48.04	30.93	19.95	12.89	8.34	5.41	3.5
100		53.38	34.76	22.64	14.75	9.62	6.27	5.66	3.79	1.74	1.1
105		32.00	42.15	28.19	18.86	6.38	8.45	2.85	1.91	2.54	0.8
110	115	14.75	10.14	6.98	4.80	3.30	2.27	1.56	1.07	0.74	0.5
115		60.28	41.49	28.58	19.69	13.57	9.35	6.46	4.46	3.08	2.1
120		14.75 29.50	20.28	6.98	4.80	3.30 6.60	2.27	3.12	2.15	1.48	0.5
130		14.79	10.52	7.48	5.32	3.78	2.69	1.91	1.36	0.97	0.6
135	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150		29.53	20.66	0.0	10.11	7.08	4.96	3.47	2.43	1.70	1.1
155	160	29.57	21.03	14.95	10.63	7.56	5.38	3.82	2.72	1.93	1.3
160		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170		26.82	19.42	7.48	10.20	7.39 3.78	5.36 2.69	3.89	2.82	0.97	0.6
175		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
185		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
195		14.79	10.52	7.48	5.32	0.0 3.78	2.69	1.91	1.36	0.97	0.6
200	205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205		0.0	8.91	0.0	4.88	3.61	2.67	0.0	1.47	0.0	0.8
215		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220	225	12.03	8.91	6.59	4.88	3.61	2.67	1.98	1.47	1.08	0.8
225		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250 255		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265	270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285	290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 95		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310	315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 325		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335	340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340 345		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355	360	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HARMONI										
PHA	TUDE	4.28	2060.07	1186.20		402.98	238.03	141.95	85.50 5.32	52.04	32.0
	DURS	4,20	4.34	4.51	4.65	4.80	4.96	5.14	3.32	5.52	5.7
ECON	D HARMON										Total M
	SE	3014.17			543.21	309.65	177.33	102.01	58.93	34.18	19.9
		4.00	4.16	4.24	4.32	4.41	4.50	4.61	4.72	4.83	4.9

GEOGRAPHIC LATITUDE = 54.33 GEOGRAPHIC LONGITUDE = 10.13 ASY. LONG. BETA = +0.8 +0.4 +1.5 +1.4 +1.0 +0.6 0.0 -0.2 3293.75 1064.27 351.50 5.33 1.98 0.75 0.29 118.90 14.66 4.48 34.61 10 2713.31 887.33 294.89 99.91 12.29 1.68 0.64 0.25 10 23.45 15 5070.24 1642.89 542.84 183.96 64.38 3.63 1.57 0.74 15 20 9332.33 2903.46 904.92 282.54 88.38 27.69 8.69 2.73 0.86 0.27 20 15975.67 25 5413.17 1849.42 637.25 221.51 77.71 27.53 9.85 3.57 1.31 3731.65 2717.96 19.81 25 30 1547.77 643.30 268.02 111.99 46.97 8.42 3.63 1.60 462.73 30 35 1111.40 196.34 84.93 37.45 16.81 7.68 3.56 1.67 35 40 1572.54 683.69 299.87 132.77 59.38 26.83 12.26 5.66 2.64 1.25 7652.03 2492.64 40 832.24 287.47 103.83 16.07 7.85 45 39.61 3.17 1.52 3.95 50 2299.10 932.29 388.07 73.79 16.04 2.03 166.46 33.84 1705.68 772.23 357.22 169.15 82.07 20.77 10.81 5.73 3.09 40.81 55 60 1422.20 743.10 396.72 120.33 39.24 22.92 13.54 8.09 216.32 68.16 60 1274.25 712.32 65 402.18 229.33 132.05 76.75 45.02 26.64 15.89 65 70 9358.26 3171.81 1115.29 5.01 412.69 163.24 69.90 32.56 16.41 8.84 70 75 2418.52 1033.54 448.01 198.00 89.81 20.60 10.57 5.71 3.24 42.13 189.40 75 80 388.88 95.45 49.91 27.11 8.93 5.38 3.34 2.12 15.29 80 85 998.15 461.28 216.19 103.23 50.52 25.50 13.37 7.31 4.18 2.50 85 90 18.31 13.02 9.26 6.59 4.68 3.33 2.37 1.68 1.20 0.85 90 21.60 95 42.44 30.26 15.42 11.02 7.88 5.64 4.04 2.90 2.08 95 24.63 4.05 100 18.23 13.49 9.99 7.39 5.47 3.00 2.22 1.64 100 21.41 11.38 3.21 1.71 105 15.63 8.29 6.04 4.40 2.34 1.25 105 5.28 110 9.30 7.00 3.98 3.00 2.27 1.71 1.29 0.98 0.74 0.70 0.54 110 3.14 115 2.45 1.48 1.15 0.90 0.42 0.33 115 0.0 0.0 0.0 0.0 0.0 0.0 120 0.0 0.0 0.0 0.0 3.81 120 6.29 4.89 1.80 0.70 1.09 0.85 0.66 125 2.96 2.31 130 1.90 3.14 7.34 0.54 0.33 1.48 1.15 0.90 0.42 130 135 9.43 5.71 0.99 2.10 1.63 1.27 4.45 3.46 2.69 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.29 145 150 0.73 0.51 0.24 0.20 0.17 0.14 0.35 0.61 0.42 150 155 3.14 2.45 1.90 0.90 0.70 0.54 0.42 0.33 1.48 1.15 0.0 155 0.0 0.0 0.0 0.0 160 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.49 1.46 1.21 1.01 0.84 0.70 0.58 0.40 0.34 0.28 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 0.0 0.0 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.73 0.51 0.35 0.29 0.24 0.20 0.17 0.14 0.61 0.42 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.73 0.61 0.42 0.35 0.29 0.24 0.20 0.17 0.14 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.73 0.29 0.17 265 270 0.61 0.51 0.42 0.35 0.24 0.20 0.14 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1437.32 315 320 4757.95 434.47 39.77 12.05 3.65 0.34 0.10 131.41 1.11 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 9269.37 2932.61 930.08 295.68 94.22 30.09 9.63 3.09 0.99 0.32 335 340 2288.02 863.04 326.12 46.82 17.79 6.78 2.59 0.99 0.38 123.46 340 345 393.44 163.86 68.26 28.44 11.85 4.94 2.06 0.86 0.36 0.15 345 350 389.37 172.07 76.17 33.82 15.10 6.81 3.12 1.47 0.73 0.34 350 355 7013.66 2184.96 682.27 213.55 67.00 21.07 6.64 2.10 0.66 0.21 5.93 355 360 260.43 1815.86 685.66 99.68 38.50 15.02 2.37 0.96 0.40 FIRST HARMONIC 83949.3829303.3410604.78 4020.68 1615.81 322.81 48.70 AMPLITUDE 695.64 161.37 86.18 1.04 PHASE 0.65 2.83 3.50 0.82 1.32 1.65 2.03 2.44 3.20 (IN HOURS) SECOND HARMONIC 51080.4417654.47 6334.77 2399.32 436.49 212.97 AMPLITUDE 978.66 112.06 62.40 36.21 PHASE 0.87 2.62 0.68 1.12 1 . 44 2.22 2.97 3.26 1.82 (IN HOURS)

KIEL

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

KIEL GEDGRAPHIC LATITUDE = 54.33 GEDGRAPHIC LONGITUDE = 10.13 ASY . LONG . / BETA = +1.6 +1.4 +1.0 +0.8 +0.6 +0.2 0.0 -0.2 0 854.48 345.46 139.68 3.74 56.48 22.84 9.24 1.51 0.25 10 394.64 168.83 72.24 30.92 13.24 5.67 2.43 1.04 0.45 0.19 10 4.38 375.25 15 176.43 83.21 39.41 18.76 9.01 2.17 1.10 0.59 15 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.57 0.99 20 25 6706.30 2480.56 919.34 341.57 127.29 47.62 17.90 6.76 25 111.99 19.81 30 3731.65 1547.77 643.30 268.02 46.97 8.42 3.63 1.60 2717.96 1111.40 30 462.73 35 196.34 84.93 37.45 16.81 7.68 3.56 1.67 35 40 1572.54 683.69 132.77 59.38 26.83 12.26 5.66 2.64 1.25 149.97 40 638.37 45 307.68 73.92 9.43 36.83 18.54 4.84 2.50 1.31 388.07 7.85 50 2299.10 932.29 73.79 33.84 16.04 166.46 3.95 2.03 50 55 1705.68 772.23 357,22 20.77 10.81 5.73 3.09 82.07 169.15 40.81 60 743.10 396.72 39.24 13.54 1422.26 22.92 216.32 120.33 8.09 68.16 60 65 1274.25 712.32 45.02 15.89 9.56 402.18 229.33 26.64 132.05 76.75 433.01 25.92 70 2344.60 986.85 199.14 4.80 96.24 48.83 14.31 8.17 70 2418.52 1033.54 448.01 198.00 89.81 42.13 20.60 10.57 5.71 3.24 75 80 388,88 189.40 95.45 49.91 8.93 5.38 27.11 15.29 3.34 2.12 998.15 80 85 216.19 13.37 4.18 461.28 103.23 25.50 7.31 2.50 50.52 90 2.37 85 18.31 1.68 0.85 13.02 9.26 6.59 3.33 1.20 4.68 90 95 21.60 5.64 2.08 42.44 30.26 15.42 11.02 7.88 4.04 2.90 13.49 95 100 24.63 18.23 9.99 7.39 5.47 4.05 3.00 2.22 1.64 11.38 6.04 100 105 21.47 15.63 8.29 4.40 3.21 2.34 1.71 1.25 105 110 9.30 7.00 5,28 3.98 3.00 1.71 0.98 0.74 2.27 1.29 110 115 3.14 2.45 1.90 0.90 0.70 0.54 0.42 0.33 1.48 1.15 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.89 1.80 120 125 6.29 3.81 2.96 2.31 1.40 1.09 0.85 0.66 1.90 125 130 0.70 3.14 2.45 1.48 1.15 0.90 0.54 0.42 0.33 9.43 0.99 130 135 7.34 4.45 3.46 2.69 2.10 1.63 1.27 0.0 0.0 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.73 0.51 0.35 0.29 0.17 0.24 0.20 0.14 0.61 0.42 150 155 1.90 0.70 3.14 1.48 0.90 0.54 0.42 0.33 2.45 1.15 0.0 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 1.46 1.01 0.84 0.70 0.58 0.49 0.40 0.34 0.28 1.21 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.51 225 230 0.73 0.29 0.35 0.24 0.20 0.17 0.61 0.42 0.14 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.29 245 250 0.51 0.17 0.73 0.61 0.42 0.35 0.24 0.20 0.14 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.17 265 270 0.73 0.61 0.51 0.42 0.35 0.29 0.24 0.20 0.14 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 2288.02 123.46 6.78 0.99 863.04 326.12 46.82 17.79 2.59 0.38 340 345 393.44 2.06 163.86 68.26 28.44 11.85 4.94 0.86 0.36 0.15 345 350 389.37 6.81 0.73 0.39 172.07 76.17 33.82 15.10 3.12 1.47 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1816.86 0.96 355 360 685.66 260.43 99.68 38.50 5.93 2.37 0.40 15.02 FIRST HARMONIC AMPLITUDE 31023.2613007.00 5603.73 2494.61 281.76 1153.90 557.23 149.25 82.66 47.68 1.92 2.84 PHASE 1.63 1.76 2.11 2.33 2.51 3.10 3.37 3.63 IN HOURS SECOND HARMONIC 21591.68 9033.63 3898.29 1747.16 402.09 818.33 207.32 111.82 62.76 36.44 PHASE 1.69 1.83 2.01 2.91 3.57 2.21 2.43 2.67 3.14 3.36 IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

KIEL GEOGRAPHIC LATITUDE = 54.33 GEOGRAPHIC LONGITUDE = 10.13 ASY.LONG./BETA= +1.6 +1.2 +0.4 +1.4 +1.0 +0.8 +0.6 0.0 -0.2 854.48 345.46 139.68 3.74 1.51 0.25 56.48 22.84 9.24 0.61 394.64 168.83 72.24 30.92 13.24 5.67 2.43 1.04 0.45 0.19 10 375.25 15 176.43 83.21 39.41 9.01 2.17 1.10 0.59 15 0.0 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 187.04 25 87.36 40.80 19.05 8.90 4.16 1.94 0.91 0.42 0.20 25 30 3731.65 1547.77 643.30 268.02 111.99 46.97 19.81 8.42 3.63 1.60 30 35 1088.14 513.09 243.10 115.72 55.34 26.58 12.82 6.21 3.02 1.48 35 299.87 1572.54 40 683.69 132.77 59.38 26.83 12.26 5.66 2.64 1.25 45 40 638.37 9.43 307.68 73.92 36.83 18.54 4.84 2.50 1.31 333.99 45 50 669.28 168.44 85.83 44.19 22.97 12.06 6.38 3.41 1.84 50 55 1705.68 772.23 357.22 82.07 20.77 5.73 3.09 40.81 10.81 169.15 55 60 1422.26 743.10 396.72 120.33 39.24 22.92 13.54 8.09 68.16 216.32 60 65 1274.25 402.18 132.05 76.75 45.02 15.89 9.56 712.32 26.64 229.33 65 70 714.79 213.38 388.54 118.52 66.64 37.97 21.93 12.85 7.64 4.60 70 75 2418.52 1033.54 448.01 198.00 89.81 42.13 20.60 10.57 5.71 3.24 75 80 388.88 95.45 189.40 49.91 27.11 15.29 8.93 5.38 3.34 2.12 80 85 998.15 13.37 7.31 2.50 461.28 216.19 103.23 50.52 25.50 4.18 85 90 18.31 9.26 2.37 0.85 13.02 6.59 4.68 3.33 1.68 1.20 4.04 90 95 42.44 30.26 21.60 15.42 11.02 7.88 5.64 2.90 2.08 95 100 24.63 18.23 13.49 9.99 7.39 5.47 4.05 3.00 2.22 1.64 100 105 21.47 15.63 11.38 8.29 6.04 4.40 3.21 2.34 1.71 1.25 105 110 9.30 7.00 5.28 3.98 3.00 2.27 1.71 1.29 0.98 0.74 110 115 1.90 0.70 3.14 2.45 1.48 1.15 0.90 0.54 0.42 0.33 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.81 1.90 5.71 120 125 6.29 4.89 2.31 1.09 0.85 1.80 1.40 2.96 0.66 125 130 0.70 3.14 0.54 2.45 1.48 1.15 0.90 0.42 0.33 130 135 9.43 7.34 1.27 0.99 2.69 2.10 1.63 4.45 3.46 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.29 145 150 0.42 0.17 0.14 0.73 0.61 0.51 0.35 0.24 0.20 0.90 150 155 3.14 1.90 0.70 2.45 1.48 1.15 0.54 0.42 0.33 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.84 0.58 0.49 1.46 1.21 1.01 0.70 0.40 0.34 0.28 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 0.0 0.0 0.0 0.0 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.73 0.51 0.35 0.29 0.24 0.20 0.17 0.14 0.61 0.42 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 0.0 0.0 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.29 0.17 245 250 0.73 0.61 0.51 0.42 0.35 0.24 0.20 0.14 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.29 265 270 0.73 0.61 0.51 0.35 0.24 0.20 0.17 0.14 0.42 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 658.21 264.74 106.48 6.93 2.19 1.12 0.45 0.18 42.83 17.23 340 345 393.44 163.86 68.26 28.44 11.85 4.94 2.06 0.86 0.36 0.15 345 350 389.37 172.07 76.17 33.82 15.10 6.81 3.12 1.47 0.73 0.39 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 187.04 1.94 355 360 87.36 40.80 0.91 4.16 19.05 8.90 0.42 0.20 FIRST HARMONIC AMPLITUDE 477.55 18012.55 8272.89 3886.54 930.93 139.27 79.16 1874.26 253.46 46.46 PHASE 2.16 2.38 3.07 3.50 3.71 2.26 2.53 2.69 2.88 3.28 IN HOURS SECOND HARMONIC AMPLITUDE 12729.97 5924.54 2825.16 1384.53 698.99 195.67 364.05 108.43 61.85 36.23 PHASE 2.95 3.29 2.28 2.38 2.51 2.79 3.12 3.46 3.64 2.64 (IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

54.33 GEDGRAPHIC LONGITUDE = GEOGRAPHIC LATITUDE = 10.13 ASY.LONG. BETA: +1.6 +1.4 +1.2 +1.0 +0.8 +0.4 +0.2 0.0 +0.6 -0. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 72.24 394.64 168.83 2.43 13.24 5.67 0.45 10 30.92 1.04 0.19 10 15 375.25 176.43 39.41 1.10 9.01 2.17 0.59 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 187.04 25 87.36 40.80 19.05 8.90 1.94 4.16 0.42 0.20 30 1168.21 511.39 224.27 98.58 43.47 3.89 19.26 8.60 1.80 0.86 243.10 30 35 1088.14 513.09 115.72 55.34 12.82 6.21 3.02 26.58 1.48 718.06 35 40 160.20 338.24 76.29 36.54 17.59 8.52 4.15 2.03 1.00 36.83 40 638.37 307.68 149.97 73.92 18.54 4.84 2.50 1.31 45 50 669.28 333.99 168.44 85.83 44.19 22.97 12.06 6.38 3.41 1.84 50 55 851.20 426.77 217.54 112.67 59.23 31.57 17.04 9.29 2.85 55 60 1422.26 743.10 396.72 216.32 120.33 68.16 39.24 22.92 13.54 8.09 1274.25 60 65 712.32 402.18 229.33 132.05 76.75 45.02 26.64 15.89 9.56 65 70 388.54 213.38 118.52 66.64 37.97 21.93 12.85 7.64 4.60 905.83 70 75 201.85 423.34 98.69 49.74 25.96 14.08 7.93 4.64 2.81 192.61 108.69 62.26 7.98 80 21.49 4.99 36.26 12.98 3.18 2.05 998.15 80 85 461.28 216.19 50.52 13.37 103.23 25.50 7.31 4.18 2.50 85 90 18.31 9.26 2.37 0.85 13.02 6.59 4.68 3.33 1.68 1.20 95 2.90 90 21.60 11.02 4.04 42.44 30.26 15.42 5.64 7.88 2.08 95 100 24.63 13.49 9.99 7.39 4.05 3.00 2.22 18.23 5.47 1.64 100 105 21.47 15.63 11.38 8.29 6.04 3.21 1.71 4.40 2.34 1.25 105 9.30 110 7.00 5.28 3.98 3.00 2.27 1.71 1.29 0.98 0.74 0.70 110 3.14 1.90 0.54 115 2.45 1.48 1.15 0.90 0.42 0.33 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 6.29 4.89 3.81 2.96 2.31 1.80 1.40 1.09 0.85 0.66 125 130 3.14 2.45 1.90 1.48 1.15 0.90 0.70 0.54 0.42 0.33 9.43 130 135 7.34 5.71 4.45 3.46 2.69 2.10 1.63 1.27 0.99 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.73 0.51 0.35 0.29 0.24 0.20 0.61 0.42 0.17 0.14 150 155 1.90 3.14 2.45 1.48 1.15 0.90 0.42 0.33 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 1.46 1.21 1.01 0.84 0.70 0.58 0.49 0.40 0.34 0.28 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.73 0.61 0.51 0.42 0.35 0.29 0.24 0.20 0.17 0.14 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.17 0.29 0.73 0.61 0.51 0.42 0.35 0.24 0.20 0.14 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.73 0.51 0.29 0.17 0.61 0.42 0.35 0.24 0.20 0.14 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 197.16 340 345 83.14 35.06 14.78 2.63 1.11 0.47 0.20 0.08 6.23 345 350 389.37 172.07 76.17 33.82 1.47 0.73 0.39 15.10 6.81 3.12 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 187.04 87.36 40.80 19.05 8.90 1.94 0.91 0.42 0.20 4.16 FIRST HARMONIC AMPLITUDE 11377.57 5605.26 2815.86 1445.49 128.58 74.95 44.81 759.68 409.38 226.42 PHASE 2.50 2.59 3.10 3.76 2.70 2 . 82 7.95 3.43 3.61 3.80 (IN HOURS) SECOND HARMONIC AMPLITUDE 8601.03 4295.35 2186.78 1136.50 603.59 327.79 182.07 103.41 60.03 35.59 2.78 PHASE 2.59 2.68 2.89 3.01 3.13 3.26 3.40

KIEL

45

80.00 GV

(IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS

				KIEL							
ASY.L	ONG.	GEOGRAPHI BETA: +1.0	+1.4	DE = !	4.33 GE +1.0	OGRAPHIC +0.8	+0.6	DE = 1 +0.4	+0.2	0.0	-0.2
0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	15	184.08	50.66	44.73	22.14	11.02	5.53	2.82	1.47	0.79	0.44
20	20	187.04	87.36	40.80	19.05	8.90	4.16	0.0	0.91	0.0	0.0
25	30	187.77	87.96	41.30	19.48	9.25	4.45	2.18	1.11	0.59	0.34
30	35	699.81		169.55	83.67	41.36	20.48	10.16	5.05	2.51	1.25
35 40	40	329.42 441.21	166.78	84.53	42.89 59.14	21.79	11.08	5.64 8.32	2.88	2.31	0.75
45	50	471.81	248.30	131.25	69.70	37.19	19.93	10.74	5.81	3.16	1.73
50	55	462.87		144.00	80.62	45.25	25.46	14.37	8.13	4.61	2.62
55 60	65	1033.62	571.64 712.32	321.05 402.18	182.92	105.58	76.75	36.37 45.02	21.64	12.98	7.84 9.56
65	70	714.79	388.54	213.38	118.52	66.64	37.97	21.93	12.85	7.64	4.60
70	75	320.03	168.74	91.13	50.51	28.76	16.82	10.09	6.20	3.88	2.48
75 80	80 85	192.61	108.69	62.26	36.26	21.49	12.98	7.98	4.99 5.57	3.18	2.05
85	90	18.31	13.02	9.26	55.05	29.54	16.36	2.37	1.68	3.42	0.85
90	95	42.44	30.26	21.60	15.42	11.02	7.88	5.64	4.04	2.90	2.08
	100	24.63	18.23	13.49	9.99	7.39	5.47	4.05	3.00	2.22	1.64
100		21.47 9.30	7.00	5.28	8.29 3.98	3.00	2.27	1.71	1.29	0.98	0.74
110		3.14	2.45	1.90	1.48	1.15	0.90	0.70	0.54	0.42	0.33
115		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120		6.29 3.14	4.89	3.81	2.96	2.31	1.80	0.70	0.54	0.85	0.66
130		9.43	7.34	5.71	1.48	1.15 3.46	2.69	2.10	1.63	0.42	0.99
135	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145		0.73 3.14	2.45	0.51	1.48	0.35	0.29	0.24	0.20	0.17	0.14
155		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
185		1.46	1.21	1.01	0.84	0.70	0.58	0.49	0.40	0.34	0.28
190		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205	210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225	230	0.73	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
230		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240	240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	250	0.73	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
250		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	270	0.73	0.0	0.0	0.0	0.35	0.0	0.24	0.20	0.17	0.14
270	275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	285 290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290	295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315	320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335	340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	350 355	0.73	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
	360	187.04	87.36	40.80	19.05	8.90	4.16	1.94	0.91	0.42	0.20
FIRS	HAR	IDNIC									
	TUDE				1077.13	600.74	340.90	196.97	115.95	69.54	42.50
	HOURS	2.90	2.97	3.05	3.14	3.24	3.35	3.47	3.61	3.76	3.91
SECO	ND HAP	MUNIC									
AMPL	TUDE	5748.03	3077.53			511.11		165.97	96.78	57.33	34.50
	HOURS	2.93	2.99	3.06	3.14	3.22	3.31	3.42	3.53	3.64	3.77
		LIMIT FOR TH	IS CALCU	LATION	15 50.00	GV					

	GENGRAPH	IC LATITE	KIEL S	4.33 GE	nco voute	LONGITH	ne = 11	0.13		
ASY.LO	NG./BETA= +1.6		+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	+0.2
0	5 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	10 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	0.73 20 0.0	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
	25 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	30 0.73	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
	146.06		40.30	21.17	11.12	5.84	3.07	1.61	0.85	0.44
	40 146.06 45 254.17		40.30	21.17	11.12 21.70	5.84 11.76	3.07 6.38	3.46	0.85	1.03
	288.45		87.03	47.98	26.52	14.70	8.16	4.55	2.54	1.42
	55 462.87		144.00	80.62	45.25	25.46	14.37	8.13	4.61	2.62
	60 659.54 65 907.54		239.46	144.81	87.78 110.71	53.34	32.48	19.83	12.13	8.95
	70 531.43	298.49	169.15	185.89 96.80	55.98	32.73	19.36	11.59	7.02	4.30
70	75 132.99	81.38	50.33	31.45	19.86	12.66	8.15	5.29	3.46	2.28
	192.61		62.26	36.26	21.49	12.98	7.98	4.99	3.18	2.05
	85 41.95 90 18.31	29.28	9.26	6.59	9.97	6.97 3.33	4.87	3.40 1.68	2.38	0.85
	95 42.44	30.26	21.60	15.42	11.02	7.88	5.64	4.04	2.90	2.08
95 10			13.49	9.99	7.39	5.47	4.05	3.00	2.22	1.64
100 10		7.00	11.38	8.29	6.04	4.40	3.21 1.71	1.29	1.71	0.74
110 11				3.98 1.48	3.00 1.15	2.27	0.70	0.54	0.98	0.33
115 17	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120 12		4.89	3.81	2.96	2.31	1.80	1.40	1.09	0.85	0.66
125 13		2.45 7.34	1.90	1.48	1.15	2.69	0.70	0.54	1.27	0.33
135 14		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140 1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145 15		2.45	0.51	1.48	0.35	0.29	0.24	0.20	0.17	0.14
155 16		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160 16	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165 1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170 1		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180 16		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
185 19	90 1.46	1.21	1.01	0.84	0.70	0.58	0.49	0.40	0.34	0.28
190 19		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
200 20		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205 2	10 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210 2		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215 22		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225 2		0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
230 2	35 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235 24		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245 2		0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
250 2	55 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255 26		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265 2		0.0	0.0	0.42	0.0	0.0	0.24	0.20	0.0	0.0
270 2	75 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275 21		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280 21		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290 29	95 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295 30		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300 30		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315 3.	20 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 3 325 3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330 3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335 3	40 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340 34		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350 3		0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
355 3	60 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HARMONIC									
PHASE		2187.17 3.33		747.14	3.53	3.61	3.71	3.82	3.94	4.07
(IN HO		3,33	3,34	9.49	3.33	3.01	3.11	3.02	3.74	4.07
SECONO	HARMONIC									
PHASE		2012.12		677.71	398.07	235.86	141.04	3.69	51.95	32.03
(IN HO	URS		3,35	3.40	3.46	3.53	3.61	3,04	3.79	3.89
	PER LIMIT FOR T	HIS CALC	JLATION I	5 29.00	GV					

GEOGRAPHIC LATITUDE = 50.72 GEOGRAPHIC LONGITUDE . 30.30 ASY.LONG./BETA= +1.6 +0.4 +1.4 +1.2 +1.0 +0.8 +0.6 +0.2 0.0 -0.2 1.57 885.78 144.79 3.87 358.11 0.26 58.55 23.68 9.58 0.63 305.69 2812.70 919.83 35.88 77.48 30.68 2.90 10 103.57 12.74 8.50 0.67 0.26 25.44 83.58 1.52 1689.52 227.68 4.13 0.56 0.20 20 620.22 11.26 25 3214.55 1140.02 409.56 149.29 55.30 20.84 8.00 3.13 1.25 0.51 25 5340.09 165.71 5.92 2.04 0.72 30 1659.83 521.14 53.51 17.61 0.26 515.01 30 35 5071.68 1609.01 166.58 54.55 2.11 0.74 18.12 6.12 0.27 35 40 12405.37 3970.69 1283.47 140.61 17.42 6.69 2.82 1.34 420.61 48.41 40 45 14222,55 4836.43 1660.28 575.45 201.41 71.20 25.44 9.19 3.36 1.24 6.58 50 3265.53 1340.78 551.10 226.77 93.43 38.54 15.92 2.73 1.13 7.29 8.97 4.31 7.48 9.24 9.71 3074.28 1245.07 4504.07 1623.98 50 16.60 55 510.86 212.47 89.59 38.30 3.24 1.45 55 614.52 60 244.05 101.38 43.80 4.20 2.00 10.55 5214.27 1737.68 2425.14 983.05 60 65 589.12 204.39 73.09 27.15 1.85 0.84 65 15.80 407.88 364.96 251.92 70 983.05 173.67 76.00 34.19 3.62 1.79 1828.12 70 809.93 2.45 167.62 78.61 37.68 18.46 75 996.78 80 498.58 66.37 18.24 5.21 128.62 34.61 80 85 8730.82 2952.60 1038.82 385.14 152.28 29.51 7.35 3.92 64.68 90 4286.88 1851.44 829,49 387.28 188.84 96.08 50.83 27.81 15.64 8.99 90 95 18.79 1432.24 728.13 377.50 199.62 107.63 59.13 33.06 10.84 6.33 871.65 95 100 443.22 229,62 1. .50 65.79 36.50 20.76 12.09 7.20 2.26 100 105 56.34 37.63 25.15 16.81 11.24 7.52 5.03 3.37 1.51 1.14 105 110 28.52 19.06 12.74 5.69 3.80 2.54 1.70 0.76 8.51 110 115 33.99 23.60 16.39 11.38 7.91 5.50 3.82 2.66 1.85 1.28 115 120 38.76 26.38 17,96 12.23 8.33 5.67 3,86 2.63 1.79 1.22 16.39 1.85 120 125 23.60 11.38 7.91 5.50 3.82 2.66 1.28 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.51 40.73 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.98 2.47 135 140 28.68 20.19 14.22 10.02 7.06 1.75 9.49 1.23 4.80 7.58 8.30 0.87 140 145 6.75 1.73 0.62 0.44 3.41 2.43 4.11 4.34 1.92 1.92 14.09 0.92 145 150 150 155 5.58 2.25 1.67 1.24 10.33 3.04 1.20 15.87 11.47 2.28 1.65 0.87 6.00 3.14 0.78 155 6.38 4.72 3.50 2.59 1.42 1.05 0.58 0.43 160 160 165 6.38 4.72 3.50 2.59 1.42 1.05 0.58 165 0.0 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 15,87 11.47 8.30 6.00 4.34 2.28 1.65 1.20 0.87 3.14 175 180 19.15 10.49 7.76 5.75 4.25 3.15 2.33 1.73 14.17 1.28 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.78 0.58 195 200 6.38 4.72 3.50 2.59 1.92 1.42 1.05 0.43 200 205 6.38 4.72 3,50 2.59 1.92 1.42 1.05 0.43 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 0.0 0.0 0.0 0.0 0.0 240 2.17 0.0 0.0 0.0 245 4.59 3.58 1.69 1.31 0.60 0.62 0.48 240 1.02 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 0.0 0.0 0.0 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4932.24 1489.97 41.23 12.49 3.78 350 355 450.38 1.15 0.35 136.23 0.11 6556.49 2140.40 704.15 8.89 360 3.03 1.04 26.24 0.36 233.43 FIRST HARMONIC 89930.4531237.0411219.34 4205.81 1663.48 0.72 0.88 1.10 1.38 1.73 317.91 154,93 80.75 AMPLITUDE 901.61 1.73 3.09 3.55 3.97 PHASE 2.15 (IN HOURS) SECOND HARMONIC 61325,2620848.82 7295.43 2660.94 1030.07 197.46 28.58 431.43 98.03 51.80 1.07 PHASE 0.67 0.84 1.36 1.72 2.15 2.58 2.99 3.35 3,66 (IN HOURS)

KIEV

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

ASYLONG (ABTH) A. A. A. A. A. A. A. A			GEOGRAPH	IC LATIT	KIEV	50 72 GI	ENGRAPHIC	LONGITH	DE = 3	0.30		
3 10 400,09 175,01 74,89 32,05 13,72 5,07 2,52 10.8 0.40 0.20 10 15 1 198,17 88,01 39,80 17,90 8.03 34,00 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.79 0.33 0.10 11,02 0.10 0.10 0.10 0.10 0.10 0.10 0.10 0.	ASY.	.ONG.									0.0	
10 13 198,17 88,81 39,80 17,90 8.00 1.02 0.79 0.33 0.20 1.19 1.20 1.60 1.62 0.79 0.33 0.20 1.19 1.20 0.60 1.10 1.20 0.50 0.20 0.20 1.20 1.20 0.40 0.40 0.40 0.40 0.40 0.40 0.40 0												
13 20 1669,52 202,02 227,68 64,19 27,708 11,196 4,193 1,92 0.56 0.20 0.20 1.20 1.20 1.20 1.20 1.20 1.20												
23 30			1689.52	620.22	227.68	83.58	30.68	11.26	4.13	1.52	0.56	0.70
30 353 204,71 \$8,83 38,36 16.73 7.26 31.15 11.37 0.39 0.26 0.12 0.13 32.44 185.46 88.22 42.58 2.07.71 10.25 5.31 2.283 1.39 0.94 40 48 6951,96 2711,43 \$95.02 354.06 131,96 49.36 18.55 7.01 2.67 7.10 2.67 1.02 30 5.3 1074,22 225.77 31.02 255.70 31.02 25												
40 95 9091,90 2971,43 993,02 394,08 131,90 493,00 18,95 77.01 21,67 1.02 45 50 3265,53 1340,78 931,10 226,77 93,43 38,454 15,92 6.58 2.73 1.02 50 35 3074,28 1245,07 310,86 212,47 89,39 38,30 18,60 7,29 3,24 1.02 50 00 95 1472,32 277,83 10,44 177,33 22,31 11,92 50 00 95 1472,32 277,83 10,44 177,37 76,00 34,19 15,80 7,48 3,62 1.09 65 70 2425,14 983,05 407,88 179,67 76,00 34,19 15,80 7,48 3,62 1.79 70 75 1828,12 80,93 344,96 167,62 78,61 37,48 18,46 9,24 4.72 2,45 73 80 96,73 489,38 231,92 128,62 66,37 34,61 18,24 9,71 5,21 2,85 73 99 90 1422,24 728,13 377,50 199,62 107,63 39,13 33,00 18,79 10,84 6.39 90 99 1422,24 728,13 377,50 199,62 107,63 39,13 33,00 18,79 10,84 6.39 91 100 871,65 43,22 229,62 121,50 65,77 36,50 20,76 12,09 7,20 4,37 100 103 36,34 37,63 25,15 16,81 11,24 7,52 3,03 3,37 2,26 1,31 101 103 36,34 37,63 25,15 16,81 11,24 7,52 3,03 3,37 2,26 1,31 110 103 36,34 37,63 25,15 16,81 11,24 7,52 3,03 3,37 2,26 1,31 111 103 38,76 26,38 17,96 12,23 8,33 5,67 38,66 2,63 1,79 1,10 1,70 120 120 33,99 23,60 16,39 11,38 7,91 5,50 3,86 2,63 1,79 1,10 1,21 120 123 33,99 6,65 24,80 3,44 12,23 8,33 5,67 38,66 2,63 1,79 1,10 1,21 130 130 0,00 0,00 0,00 0,00 0,00 0,00 0,												
45 50 3265,33 1340,78 551,10 226,77 93,43 38,54 15,92 6,58 2,73 1.45 30 50 1975,44 878,68 394,93 174,34 82,31 38,18 17,90 8,48 4,05 1.96 00 70 70 1828,12 809,93 36,46 107,62 78,61 37,68 18,46 9,24 4,72 2,76 70 75 1828,12 809,93 36,46 107,62 78,61 37,68 18,46 9,24 4,72 2,25 80 85 1400,23 687,60 331,50 183,77 82,83 42,46 18,24 9,71 5,21 2,85 80 85 1400,23 687,60 331,50 183,77 82,83 42,84 22,63 12,18 6,67 3,72 100 103 56,34 37,63 23,15 18,61 11,24 7,72 2,85 100 100 103 56,34 37,63 23,15 18,61 11,24 7,72 2,85 100 100 103 56,34 37,63 23,15 18,61 11,24 7,72 2,85 100 100 103 56,34 37,63 23,15 18,61 11,24 7,75 2,50 3,33 7,22 6 1,51 100 110 28,52 19,06 12,74 8,51 5,00 3,00 3,80 2,54 1,70 1,14 0,70 110 113 33,99 23,80 10,39 11,29 18,28 7,39 1,29 1,29 1,29 1,29 1,29 1,29 1,29 1,2						42.58	20.77	10.35	5.31	2.83	1.59	0 94
90 95 3074.28 1249.07 910.86 2121.47 891.90 318.90 14.60 71.29 31.24 1.90 60 05 472.32 217.83 101.44 47.73 22.71 10.93 5.32 2.62 1.31 0.60 60 05 472.32 217.83 101.44 47.73 22.71 10.93 5.32 2.62 1.31 0.60 71.9												
00 05 472,32 217,83 101,44 47.73 22711 10.93 3.32 2.02 1.31 0.20 1.79 70 75 1826.12 809,93 304,96 187,62 78,61 37,68 18.46 9.24 4.72 2.45 809,93 304,96 187,62 78,61 37,68 18.46 9.24 4.72 2.45 809,93 304,96 187,62 78,61 37,68 18.46 9.24 4.72 2.45 809,93 1400,23 687,64 331,59 1807,77 82,88 47,88 22,65 12,11 6,64 37,70 194,62 199,90 1400,23 687,64 331,59 1807,77 82,88 47,88 22,65 12,11 6,64 37,70 194,62 199,90 1400,23 687,74 17,75 194,62 197,75 194,	50	55	3074.28	1245.07	510.86	212.47			16.60			1.45
85 70 242514 983:05 407.88 179.67 76:00 34:19 15:80 7.48 3:02 1.77 77 77 77 78 1826.12 80.93 34.49 179.67 78:01 34:19 15:80 7.48 3:02 1.77 77 78:00 99 99 498.58 251.92 128.62 66.37 34:61 18.24 9.71 5.21 2.83 80 85 1400.23 687:60 331.56 183.77 34:61 18.24 9.71 5.21 2.83 80 85 1400.23 687:60 331.56 183.77 34:61 18.24 9.71 5.21 2.83 80 80 85 1400.23 687:60 331.56 183.77 34:61 18.24 9.71 5.21 2.83 80 80 85 1400.23 687:60 331.56 183.77 34:61 18.24 9.71 5.21 2.83 80 80 80 80 1400.23 687:60 331.56 183.77 34:61 18.24 9.71 5.21 2.83 80 80 80 95 1400.23 687:60 301.56 183.75 18.25												
70 73 1828.112 809.93 364.96 187.62 78.61 37.68 18.66 9.24 4.72 2.45 78.60 996.75 48.51.92 128.62 66.37 3.60 11.24 9.71 1.24 9.71 1.25 1.26 1.26 1.27 1.27 1.27 1.27 1.27 1.27 1.27 1.27												
80 85 1460,23 687,60 331,50 169,77 82,63 42,64 22,63 12,18 6,67 3,70 85 90 99 1432,22 728,13 377,50 199,62 107,63 59,13 33,06 18,79 10,84 6,33 99 100 871,65 443,22 29,62 121,50 65,79 36,50 20,76 12,09 72,0 4,37 100 103 57,34 37,63 25,15 18,68 11,24 7,52 5,03 33,06 18,79 10,84 6,33 100 103 58,34 37,63 25,15 18,68 11,24 7,52 5,03 3,37 2,26 1.51 109 113 225,24 37,63 25,15 18,68 11,24 7,52 5,03 3,37 2,26 1.51 119 120 38,76 26,38 17,79 12,78 15,85 1,29 119 120 38,76 26,38 17,79 12,79 119 120 38,76 26,38 17,79 12,23 8,33 5,47 3,86 22,46 1.51 1.51 1.07,8 119 120 38,76 26,38 17,79 12,23 8,33 5,47 3,86 22,45 1.77 11.52 120 133 9,90 23,40 10,39 11,38 7,91 5,50 3,86 22,45 1.77 11.52 120 133 9,00 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,						167.62	78.61		18.46		4.72	2.45
85 90 4286,88 1851.44 829,49 817,28 188,34 96,08 50,83 27,81 15,64 8,09 90 95 1432,27 728,13 377,50 194,02 107,63 50,13 33,00 18,79 77,20 4,37 100 103 56,43 37,63 25,15 16,81 11,24 7,752 53,00 18,79 10,10 103 56,43 37,63 25,15 16,81 11,24 7,752 53,03 3,37 22,26 1.51 103 110 28,52 19,00 12,74 8,51 5,69 3.80 2,54 1.70 1.14 0.76 110 113 33,49 23,60 16,79 11,28 7,91 12,28 8,33 5,67 3.80 2,54 1.70 1.14 0.76 110 113 33,49 23,60 16,00 10,00 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0												
99 100 971.69 443.22 229.62 121.50 65.79 36.50 20.76 12.09 7.20 4.97 100 109 56.36 37.66 12.09 7.20 4.97 100 109 56.36 37.66 12.09 7.20 4.97 100 109 56.36 37.66 12.09 7.52 1.90 110 119 33.99 23.60 16.39 11.38 7.91 5.50 3.20 2.56 1.70 1.14 0.76 110 119 33.99 23.60 16.39 11.38 7.91 5.50 3.20 2.56 1.70 1.15 1.22 110 120 33.76 26.38 17.96 12.23 8.33 5.67 3.86 22.63 1.79 1.22 120 122 33.90 23.60 16.39 11.38 7.91 5.50 3.20 2.26 2.66 1.79 1.22 110 120 33.90 23.60 16.39 11.38 7.91 5.50 3.20 2.26 2.60 1.79 1.22 1.20 120 27 1.20 120 27 1.20 120 120 120 120 120 120 120 120 120 1	85	90	4286.88		829.49							
100 105												
105 110												
115 120 38,76 26.38 17,96 12.23 8,33 5.67 3.86 2.63 1,79 1.22 120 125 33,99 23.60 16.39 11.38 7.91 5.50 3.82 2.66 1.85 1.22 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0	105	110	28.52	19.06	12.74	8.51	5.69	3.80	2.54	1.70	1.14	0.76
120 125 33,99 23,60 10,39 11,38 7,91 5,50 3,82 2,60 10,85 10,85 125 130 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0					16.39							
125 130												
135 140 40,73 28,68 20,19 14.22 10.02 77.06 4.98 3.51 2.27 10.75 140 145 9.99 6.75 4.80 3.41 2.33 1.23 0.87 0.02 0.44 145 150 14.09 10.33 7.58 5.58 4.11 3.04 2.25 1.67 1.24 0.92 150 155 15.87 11.47 8.30 6.00 4.34 3.14 2.28 1.65 1.20 0.87 155 100 6.38 4.72 3.50 2.59 1.92 11.42 1.05 0.78 0.58 0.43 160 105 6.38 4.72 3.50 2.59 1.92 11.42 1.05 0.78 0.58 0.43 163 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0					0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
140 145												
150 155	140	145										0.44
155 100 6,38 4,72 3,50 2,59 1,92 1,42 1,05 0,78 0,58 0,43 165 170 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0	-	-										
100 105												
170 175 180 19.5 19.87 11.47 8.30 6.00 2.34 3.14 2.28 1.65 11.20 0.87 175 180 19.5 14.17 10.49 7.76 5.75 4.25 3.15 2.33 1.73 1.28 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.		-										
175 180												
180 185												20.7
190 195	180	185	0.0		0.0							
195 200 6.38 4.72 3.50 2.59 1.92 11.42 1.05 0.78 0.58 0.43 200 205 6.38 4.72 3.50 2.95 1.92 11.42 1.05 0.78 0.58 0.43 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0												
200 205												
210 215	200	205	6.38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
215 220												
220 225												
230 235					0.0			0.0				
240 245	230	235										
240 249 4,59 3,58 2,78 2,17 1,69 1,31 1,02 0,80 0,62 0,46 245 250 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 255 255 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0,0 0	. 235	240	0.0		0.0							
250 255	240	245										
255 260												
265 270			0.0	0.0	0.0	0.0			0.0	0.0	0.0	0.0
270 275												
275 280	270	275										
285 290					0.0							
290 295												
300 305	290	295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305 310												
310 315												
320 325			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325 330												
335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0												
340 345				0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350												
350 355	345	350	0.0	0.0	0.0					0.0		0.0
FIRST HARMONIC AMPLITUDE 32210.4013445.34 9754.63 2538.22 1159.81 551.63 274.01 142.31 77.19 43.58 PHASE 1.63 1.78 1.96 2.18 2.44 2.74 3.07 3.41 3.76 4.10 (IN HOURS) SECOND HARMONIC AMPLITUDE 22811.22 9443.62 4010.77 1758.11 800.22 379.92 188.44 97.44 52.27 28.91 PHASE 1.68 1.83 2.01 2.22 2.46 2.72 2.98 3.25 3.50 3.75 (IN HOURS)							0.0	0.0			0.0	0.0
AMPLITUDE 32210.4013445.34 5754.63 2538.22 1159.81 551.63 274.01 142.31 77.19 43.58 PMASE 1.63 1.78 1.96 2.18 2.44 2.74 3.07 3.41 3.76 4.10 (IN MOURS) SECOND HARMONIC AMPLITUDE 22811.22 9443.62 4010.77 1758.11 800.22 379.92 188.44 97.44 52.27 28.91 PMASE 1.68 1.83 2.01 2.22 2.46 2.72 2.98 3.25 3.50 3.75 (IN MOURS)				620.22	227.08	03.58	30.68	11.26	4.13	1.52	0.56	0.20
(IN HOURS) SECOND HARMONIC AMPLITUDE 22811.22 9443.62 4010.77 1758.11 800.22 379.92 188.44 97.44 52.27 28.91 PHASE 1.68 1.83 2.01 2.22 2.46 2.72 2.98 3.25 3.50 3.75 (IN HOURS)	AMPL	TUDE	32210.401									
SECOND HARMONIC AMPLITUDE 22811.22 9443.62 4010.77 1758.11 800.22 379.92 188.44 97.44 52.27 28.91 PHASE 1.68 1.83 2.01 2.22 2.46 2.72 2.98 3.25 3.50 3.75 (IN HOURS)				1.78	1.96	2.18	2.44	2.74	3.07	3.41	3.76	4.10
AMPLITUDE 22811.22 9443.62 4010.77 1758.11 800.22 379.92 188.44 97.44 52.27 28.91 PHASE 1.68 1.83 2.01 2.22 2.46 2.72 2.98 3.25 3.50 3.75 (IN MOURS)												
(IN HOURS)	AMPL	TUDE	22811.22									
				1.83	2.01	2.22	2.46	2.72	2.48	3.25	3.50	3.75
				IS CALC	JEATION !	15 188.75	5 GV					

		C=0CD+0		KIEV							
ASY.I	ONG.	GEOGRAPHI BETA: +1.6	+1.4	+1.2	0.72 GE +1.0	+O.B	+0.6		0.30	0.0	-0.2
A3106	0110.7	BE W- +1.0	*1.*	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
0	5	885.78	358.11	144.79	58.55	23.68	9.58	3.87	1.57	0.63	0.26
5	10	409.09	175.01	74.89	32.05	13.72	5.87	2.52	1.08	0.46	0.20
10	15	198.17	88.91	39.89	17.90	8.03	3.60	1.62	0.73	0.33	0.15
20	20	0.0 876.21	364.99	0.0	0.0	27.08	11.49	4.90	2.10	0.0	0.0
25	30	407.85	169.86	70.76	29.48	12.28	5.12	2.13	0.89	0.37	0.15
30	35	204.71	88.83	38.54	16.73	7.26	3.15	1.37	0.59	0.26	0.11
35	40	392,84	185.84	88.52	42.58	20.77	10.35	5.31	2.83	1.59	0.94
40	45	193.89	90.56	42.29	19.75	9.23	4.31	2.01	0.94	0.44	0.21
45 50	50 55	3265,53		551.10 283.18	226.77	93.43	38.54	15.92	6.58	2.73	1.13
55	60	1384.76	624.86 878.83	394.93	179.34	58.91 82.31	27.04 38.18	17.90	5.77 8.48	4.05	1.25
60	65	472.32	217.83	101.44	47.73	22.71	10.93	5.32	2.62	1.31	0.66
65	70	735.63	362.83	180.20	90.08	45.32	22.93	11.67	5.97	3.07	1.58
70	75	1828.12	809.93	364.96	167.62	78.61	37.68	18.46	9.24	4.72	2.45
75	80	996.78	498.58	251.92	128.62	66.37	34.61	18.24	9.71	5.21	2.83
80 85	85 90	1460.23 2597.36	687.60	331.56	163.77	82.83 158.15	42.84 84.82	22.63 46.70	12.18	6.67	3.70 8.79
90	95	1432.24	728.13	377.50	199.62	107.63	59.13	33,06	18.79	10.84	6.33
	100	871.65	443.22	229.62	121.50	65.79	36.50	20.76	12.09	7.20	4.37
	105	56,34	37.63	25.15	16.81	11.24	7.52	5.03	3.37	2.26	1.51
105		28,52	19.06	12.74	8.51	5.69	3.80	2.54	1.70	1.14	0.76
110		33.99	23.60	16.39	11.38	7.91	5.50	3.82	2.66	1.85	1.28
120		38.76 33.99	26.38	17.96	12.23	8.33 7.91	5.67	3.82	2.63	1.85	1.22
125		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135		40.73	28.68	20.19	14.22	10.02	7.06	4.98	3.51	2.47	1.75
140		9.49	6.75	4.80	3.41	2.43	1.73	1.23	0.87	0.62	0.44
145		14.09	10.33	7.58 8.30	5.58	4.11	3.04	2.25	1.67	1.24	0.92
155		6.38	11.47	3.50	2.59	1.92	3.14	1.05	0.78	0.58	0.43
160		6.38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
165		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170		15,87	11.47	8.30	6.00	4.34	3.14	2.28	1.65	1.20	0.87
175		19.15	14.17	10.49	7.76	5.75	4.25	3.15	2.33	1.73	1.28
180	185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	200	6,38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
	205	6.38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
205		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	245	4.59	3.58	2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
245	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330	335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRST			3.0	3,0	0.0	0.0	0.0				
AMPLI	TUDE	18758.57				933.10	471.50	246.01	132.65	73.90	42.47
PHA		2.17	2.30	2.45	2.64	2.85	3.09	3.35	3,63	3.92	4.21
(IN H											
AMPLI		13692.60	6252.48	2914.54	1390.95	681.34	343.12	177.72	94.59	51.63	28.83
PHA		2,26	2.38		2.67	2.85	3.03	3.23	3.43	3.63	3,83
(IN H	DURS)									
THE U	PPER	LIMIT FOR TH	HIS CALCI	JEATION !	5 111.25	GV					

GEOGRAPHIC LATITUDE = 50.72 GEOGRAPHIC LONGITUDE -30.30 ASY.LONG./BETA= +1.6 +1.4 +1.0 +0.6 +0.8 +0.4 +0.2 0.0 -0.2 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 409.09 74.89 0.20 1.08 175.01 32.05 13.72 5.87 2.52 0.46 1.62 10 15 88.91 17.90 8.03 3.60 0.33 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 193.89 204.39 204.71 20 25 90.56 42.29 19.75 9.23 4.31 2.01 0.94 0.44 0.21 25 36,34 38,54 88,52 30 86.19 15.33 6.46 2.73 1.15 0.48 0.20 0.09 30 35 88.83 16.73 7.26 1.37 0.59 0.11 3.15 0.26 42.58 35 40 392.84 185.84 20.77 10.35 5.31 2.83 1.59 0.94 40 193,89 90.56 42.29 0.44 9.23 4.31 2.01 0.94 0.21 151.13 50 \$11.65 350.12 65.28 28.21 12.20 5.28 2.29 0.43 1181.30 55 541.18 520.72 50 5.36 2.51 114.73 53.09 24.65 11.48 1.18 250.14 14.03 58.63 60 3.42 28.60 1.70 60 65 472.32 735.63 217.83 101.44 47.73 2.62 1.31 22.71 45.32 10.93 0.66 70 90.08 22.93 362.83 11.67 942.34 220.16 54.93 70 75 14.59 451.82 109.07 7.68 4.09 2.20 28.10 75 996.78 498.58 18.24 9.71 5.21 80 128.62 2.83 34.61 85 777.92 221.18 64.97 19.74 11.02 3.51 80 413.17 119.37 35.66 6.20 85 90 1508.12 789.44 422.60 230.99 128.65 72.85 41.84 24.32 8.46 14.28 90 95 1432.24 728.13 377.50 199.62 18.79 10.84 6.33 107.63 59.13 33.06 95 100 65.79 20.76 871.65 443.22 229.62 121.50 36.50 12.09 7.20 4.37 100 105 56.34 37.63 25.15 16.81 11.24 7.52 5.03 3.37 2.26 1.51 28.52 105 110 19.06 12.74 8.51 5.69 3.80 2.54 1.70 1.14 0.76 110 115 23.60 16,39 11.38 7.91 5.50 3.82 2.66 1.85 1.28 38.76 115 17.96 12.23 120 26.38 8.33 5.67 3.86 2.63 1.79 1.22 120 125 23.60 11.38 7.91 5.50 3.82 2.66 1.85 1.28 125 0.0 0.0 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 0.0 0.0 0.0 0.0 135 0.0 0.0 0.0 0.0 0.0 40.73 135 28.68 20.19 10.02 4.98 3.51 2.47 14.22 140 7.06 4.80 140 145 6.75 1.73 0.87 0.44 3.41 2.43 1.23 0.62 145 150 14.09 10.33 3.04 2.25 1.67 1.24 0.92 4.11 150 155 15.87 8.30 0.87 11.47 6.00 4.34 3.14 2.28 1.65 1.20 1.05 155 6.38 4.72 3.50 2.59 1.92 0.78 160 1.42 0.58 0.43 3.50 160 165 6,38 4.72 2.59 1.92 1.42 0.78 0.58 1.05 0.43 163 0.0 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 15.87 11.47 1.65 0.87 8.30 6.00 4.34 3.14 1.20 19,15 175 180 14.17 10.49 7.76 5.75 4.25 3.15 2.33 1.73 1.28 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.78 195 200 6.38 4.72 3.50 2.59 1.92 1.42 1.05 0.58 0.43 200 205 3,50 1.92 0.58 6.38 4.72 2.59 1.42 1.05 0.43 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 0.0 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.58 0.80 240 245 4.59 2.78 2.17 1.69 1.31 1.02 0.62 0.48 245 0.0 0.0 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 0.0 0.0 0.0 0.0 0.0 0.0 265 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 0.0 0.0 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 0.0 0.0 0.0 0.0 310 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC AMPLITUDE 11750.17 5749.40 2864.14 2.70 2.84 755.80 601.66 218.69 122.05 69.82 40.91 PHASE 3.61 3.00 3.19 3.39 3.84 4.09 4.34 (IN HOURS)
SECOND HARMONIC
AMPLITUDE 8986.25 4407.69 2198.36 1116.25
2.75 2.86 2.99 577.52 163.71 49.94 304.57 89.63 28.27 3.59 3.75 3.93 3.13 3.28 3.43 (IN HOURS)

80.00 GV

THE UPPER LIMIT FOR THIS CALCULATION IS

KIEV GEOGRAPHIC LATITUDE = 50.72 GEOGRAPHIC LONGITUDE . 30.30 ASY.LONG./BETA= +1.6 +1.2 +0.6 +0.4 +0.2 +1.0 +0.8 0.0 -0.2 +1.4 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 19.75 20 25 193.89 90.56 42.29 4.31 2.01 0.94 0.44 25 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 30 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 194.67 35 24.68 6.74 40 96.92 48.63 12.74 3.69 2.11 1.26 0.80 40 2.01 45 42.29 0.94 90.56 9.23 4.31 0.44 0.21 0.0 133.98 171.70 65.10 7.35 0.0 3.56 5.59 45 50 0.0 1.73 2.84 0.0 0.0 64.78 0.0 0.0 0.0 277.25 50 574.04 15.17 0.84 31.34 686.78 267.93 530.92 60 86.16 21.85 11.04 43.34 0.57 2.14 60 65 131.65 16.25 4.17 32.41 8.21 2.61 70 73.36 38.06 10.30 274.00 141.65 70 75 335.07 187.89 105.38 59.12 33,18 18.62 10.46 5.87 3.30 1.85 16.62 75 80 798.61 409.66 212.02 110.72 58.34 31.01 8.98 4.89 2.68 80 85 777.92 413.17 221.18 119.37 64.97 11.02 3.51 35.66 6.20 85 90 900.86 525.51 307.82 181.04 106.90 63.37 37.71 22.52 13.50 302.61 189.73 17.71 90 95 1023.15 553.11 167.57 93.91 53.26 30.55 10.38 95 100 673.48 354.31 103.60 57.76 32.90 19.14 11.36 6.87 4.23 16.81 2.26 100 105 56.34 37.63 25.15 11.24 7.52 5.03 3.37 1.51 28.52 105 110 19.06 12.74 8.51 5.69 3.80 2.54 1.70 0.76 3.82 110 115 23.60 16.39 11.38 7.91 5.50 2.66 1.85 1.28 115 38.76 17.96 12.23 120 26.38 8.33 5.67 3.86 2.63 1.79 1.22 33.99 120 16.39 3.82 125 23.60 11.38 7.91 5.50 2.66 1.85 1.28 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.51 0.0 1.75 135 140 4.98 40.73 28.68 20.19 4.80 7.58 7.06 2.47 14.22 10.02 9,49 0.87 0.62 2.43 3.41 0.44 145 150 14.09 10.33 3.04 2.25 1.67 1.24 0.92 4.11 150 11.47 155 15.87 8.30 4.34 1.65 0.87 6.00 2.28 1.20 3.14 0.78 155 3.50 160 6.38 2.59 1.92 1.42 1.05 0.58 0.43 160 6.38 4.72 3.50 2.59 1.92 1.42 0.58 165 1.05 0.43 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 15.87 11.47 8.30 4.34 6.00 3.14 2.28 1.65 1.20 175 180 19.15 10.49 7.76 5.75 3.15 2.33 1.73 14.17 4.25 1.28 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.78 195 200 6.38 4.72 3.50 2.59 1.92 1.42 1.05 0.58 0.43 200 205 6.38 4.72 3.50 2.59 1.92 1.42 1.05 0.58 0.43 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 215 220 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 4.59 0.80 3.58 2.78 2.17 1.69 1.02 0.48 1.31 0.62 250 0.0 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 189.01 AMPLITUDE 6956.65 1974.50 592.15 331.82 109.50 64.54 38.71 3682.64 1073.35 PHASE 3.10 3.20 3.31 3.91 4.09 (IN HOURS) SECOND MARMONIC 5770.40 3046.71 1625.52 147.14 876.74 478.17 263.76 27.28 83.00 47.33 PHASE 3.09 3.78 3.16 3.24 3.34 3.43 3.54 3.65 3.91 4.05 (IN HOURS) THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

				KIEV							
ASV.I	ONG.	GEOGRAPHI	LATITU	DE = 5	0.72 GE	DGRAPHIC +0.8	LONGITU	DE = 3	+0.2	• •	-0 3
M31.1	.unu.	/BETA- +1.0	**.*	+1.2	+1.0	+0.8	+0.0	+0.4	+0.2	0.0	-0.2
0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30	35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35	40	4.59	3.58	2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
40	50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50	55	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
55	60	302.82	159.07	83.56	43.90	23.06	12.11	6.36	3,34	1.76	0.92
60	65	74.04	41.09	22.60	12.65	7.02	3.90	2.16	1.20	0.67	0.37
70	70	340.85 335.07	180.65	95.81	50.84	27.00 33.18	18.62	10.46	4.06 5.87	3.30	1.15
75	80	410.83	228.55		71.22	39.89	22.39	12.60	7.10	4.01	2.27
80	85	397.77	226.47	129.49	74.34	42.85	24.80	14.41	8.40	4.91	2.88
85	90	900.86	525.51	307.82	181.04	106.90	63.37	37.71	22.52	13.50	8.12
90	100	639.19 289.52	369.21	214.47	125.30	73.63	43.52	25.87	9.11	9.29 5.79	3.70
	105	56.34	170.40 37.63	25.15	16.81	37.48	7.52	5.03	3.37	2.26	1.51
105		28.52	19.06	12.74	8.51	5.69	3.80	2.54	1.70	1.14	0.76
110		33,99	23.60	16.39	11.38	7.91	5.50	3.82	2.66	1.85	1.28
115		38.76	26.38	17.96	12.23	8.33	5.67	3.86	2.63	1.79	1.22
120		33.99	23.60	16.39	11.38	7.91	5.50	0.0	0.0	1.85	0.0
130		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
135	140	40.73	28.68	20.19	14.22	10.02	7.06	4.98	3.51	2.47	1.75
140		9.49	6.75	4.80	3.41	2.43	1.73	1.23	0.87	0.62	0.44
145		14.09 15.87	10.33	7.58	5.58	4.11	3.04	2.25	1.67	1.24	0.92
155		6.38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
160		6.38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
165		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170		15.87	11.47	8.30	6.00	4.34	3.14	2.28	1.65	1.20	0.87
175		19.15	0.0	0.0	7.76	0.0	0.0	3.15	0.0	1.73	1.28
185		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
195		6.38	4.72	3.50	2.59	1.92	1.42	1.05	0.78	0.58	0.43
200		6.38	4.72	3.50	2.59	1.92	0.0	0.0	0.78	0.58	0.43
210		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215	220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240	245	4.59	3.58	2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
245		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265	270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290	295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315	320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	330 335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340	345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	355	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	360 T HAR	MONIC 0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	TUDE		2187.75	1263.01	735.11	431.60	255.77	153.08	92.58	56.60	35.00
PH	ASE	3,64	3.71	3,80	3.90	4.01	4.13	4.27	4.41	4.58	4.75
	HOURS										
	TUDE	3409-11	1932.56	1101-10	630.65	363.14	210.24	122.39	71.64	42.17	24.96
	ASE	3.54	3.59		3.71	3.78	3.85	3.94	4.03	4.13	4.25
(IN F	HOURS)									
THE	JPPER	LIMIT FOR TH	IS CALC	JLATION I	\$ 29.00	cv					

53.82 GEOGRAPHIC LONGITUDE = 358.45 GEOGRAPHIC LATITUDE = ASY.LONG./BETA= +0.8 +1.6 +1.4 +1.2 +1.0 +0.6 +0.4 +0.2 0.0 -0.2 4935.63 1518.94 471.66 148.27 47.39 1.80 0.24 15.48 5.20 0.65 12494.85 4117.95 1365.61 11940.38 4068.00 1404.66 6.00 8.54 7.03 10 455.69 153.00 51.68 17.56 3.22 0.71 15 174.68 62.95 20 3837.56 1531.08 614.60 16.98 2.93 1.23 248.24 100.89 41.27 20 937.68 195.32 19.94 4.56 2084.19 425.90 90.44 42.27 9.49 2.20 348.77 49.06 25 30 3073.10 1012.23 126.92 20.15 8.74 3.97 1.87 0.91 5308.47 1826.62 30 35 649.00 240.36 93.60 38.54 16.79 7.70 3.69 1.83 35 40 2148.26 853.34 346.59 144.59 12.78 3.02 62.22 27.71 6.11 40 45 1876.35 844.58 387.91 182.24 87.74 21.96 11.40 6.06 3.29 43.33 45 50 1544.18 832.89 457.40 255.59 145.15 83.66 48.86 28.86 17.22 10.36 3429.88 50 55 1279.78 531.63 246.09 124.70 67.44 38.06 22.08 13.04 7.80 55 8473.81 3102.03 1173.27 60 461.61 190.22 82.59 37.92 18.43 9.45 5.09 797.63 7.36 60 70 351.63 161.17 77.60 39.55 21.40 12.25 4.59 2.95 65 584.45 271.80 130.16 64.52 33.25 17.87 10.01 5.84 3.52 2.19 70 174.11 5.95 75 784.36 367.40 83.82 41.23 20.85 10.91 3.39 2.02 21.54 80 42.33 4.03 30.18 15.38 10.99 2.89 7.86 5.63 2.07 80 85 7.86 5.75 20.13 4.21 3.08 2.26 1.65 1.70 85 90 21.41 11.35 15.58 8.26 6.02 4.39 3.20 2.33 1.24 90 95 15.41 8.63 11.53 2.72 2.04 1.53 6.46 4.84 3.62 1.15 95 3.13 0.54 100 1.90 1.48 1.15 0.70 0.42 2.44 0.90 0.33 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 105 110 9.40 7.32 5.70 4.43 3.45 2.69 2.09 1.63 1.27 0.99 110 1.90 0.54 115 3.13 2.44 1.48 1.15 0.90 0.70 0.42 0.33 115 4.88 3.80 2.96 1.09 120 6.27 2.30 1.79 1.39 0.84 0.66 120 125 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.48 1.15 130 135 3.13 2.44 1.90 0.90 0.70 0.54 0.42 0.33 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 150 155 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 175 180 0.97 0.67 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 0.67 180 185 0.39 0.27 0.22 0.19 0.80 0.56 0.46 0.32 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 0.67 200 0.97 0.80 0.39 0.32 0.27 0.22 0.19 0.56 0.46 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.97 0.80 0.67 0.39 0.32 0.27 0.22 0.19 0.56 0.46 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 225 230 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 230 235 0.97 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.97 0.67 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 2432.63 716.86 211.25 62.25 18.34 5.41 1.59 0.47 0.14 0.04 310 315 2312.35 716.54 222.04 68.80 6.61 2.05 0.63 0.20 0.06 21.32 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10869.48 13.58 320 325 3521.28 1146.58 375.28 123.48 40.84 4.54 1.53 0.52 325 330 139.30 1.51 852.15 344.52 56.33 22.78 9.21 0.61 0.25 330 335 393.56 168.37 30.83 13.20 5.65 2.42 1.04 0.44 0.19 4935.63 335 471.66 47.39 340 5.20 1518.94 148.27 15.48 1.80 0.65 0.24 6.96 340 345 3874.94 2.45 1342.28 466.16 56.67 19.83 0.86 0.31 162.32 842.94 146.88 4.72 345 350 0.87 0.38 351.13 61.71 26.05 11.05 5137.34 159.41 51.48 1.96 350 355 0.69 1596.81 16.94 5.69 0.25 355 360 2629.35 920.87 328.31 0.52 119.66 6.86 2.82 1.19 FIRST HARMONIC AMPLITUDE 83924.4629266.8810580.25 4006.75 1608.33 691.64 320.58 159.99 85.31 48.08 0.59 0.98 2.39 PHASE 0.76 1.59 1.98 2.80 3.51 1.26 3.17 IN HOURS SECOND HARMONIC 51167.4317589.55 6274.64 2364.51 962.57 430.72 211.89 112.73 63.53 37.31 PHASE 0.59 0.78 1.03 2.59 2.95 1.36 1.76 2.18

LEEDS

54

(IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

GEDGRAPHIC LATITUDE = 53.82 GEDGRAPHIC LONGITUDE = 358.45 ASY. LUNG. / BETA = +1.6 +1.4 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0. 190.65 85.54 38.38 7.73 0.70 17.22 3.47 1.56 0.31 0.14 21.67 7.96 3250.75 1193.34 438.07 59.04 2.97 10 160.82 2.55 0.39 1888.99 4945.84 724.25 278.86 107.87 16.40 6.45 1.02 15 3837.56 1531.08 2.93 20 614.60 248.24 100.89 41.27 16.98 7.03 1.23 937.68 195.32 20 2084.19 425.90 90.44 42.27 19.94 9.49 4.56 2.20 25 30 640.47 295.37 137.53 64.67 30.72 14.74 7.15 3.50 1.73 0.87 30 746.55 364.47 179.83 89.65 45.13 22.94 11.76 6.08 3.17 1.66 35 40 2148.26 853.34 346.59 144.59 62.22 27.71 12.78 6.11 3.02 1.54 182.24 40 45 1876.35 844.58 387.91 87.74 21.96 43.33 6.06 3.29 11.40 45 50 1544.18 832.89 457.40 255.59 145.15 48.86 28.86 83.66 17.22 10.36 997.26 106.36 12.90 50 55 562.93 320.38 183.84 7.76 62.03 36.47 21.61 55 3911.89 4.97 60 1639.88 704.10 310.90 141.75 56.98 32.89 16.80 8.93 65 70 797,63 7.36 4.59 2.95 60 351.63 161.17 77.60 39.55 21.40 12.25 2.19 65 584.45 271.80 130.16 64.52 33.25 10.01 5.84 3.52 70 75 784.36 367.40 174.11 83.82 41.23 20.85 10.91 5.95 3.39 2.03 75 80 42.33 30.18 21.54 15.38 10.99 7.86 5.63 4.03 2.89 2.07 14.71 80 85 20.13 10.75 7.86 5.75 4.21 3.08 2.26 1.65 90 85 21.41 15.58 8.26 6.02 4.39 3.20 2.33 1.24 90 95 15.41 11.53 8.63 2.72 1.53 6.46 4.84 3.62 2.04 1.15 1.90 95 100 3.13 2.44 1.48 0.70 1.15 0.90 0.54 0.42 0.33 0.0 100 0.0 0.0 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.70 4.43 0.99 105 9.40 2.09 110 3.45 2.69 1.63 1.27 1.90 1.15 0.70 0.54 110 115 3.13 2.44 0.90 0.42 0.33 3.80 115 2.96 120 6.27 4.88 2.30 1.79 1.39 1.09 0.84 0.66 120 0.0 0.0 125 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0,0 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 3.13 2.44 1.90 1.48 1.15 0.90 0.70 0.54 0.42 0.33 0.0 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 150 155 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 55 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 0.97 0.67 175 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 175 0.0 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.67 0.97 0.80 0.27 0.56 0.46 0.39 0.32 0.22 0.19 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 0.97 0.80 0.67 0.46 0.39 0.19 200 0.56 0.32 0.22 0.27 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 0.67 210 215 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.97 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 230 235 0.97 0.80 0.67 0.56 0.32 0.27 0.46 0.39 0.22 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.97 0.67 0.80 0.56 9.46 0.39 0.32 0.27 0.22 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 1625.37 596.67 3.98 219.04 80.41 29.52 10.84 0.54 0.20 325 852.15 330 139.30 344.52 56.33 22.78 9.21 3.73 1.51 0.61 0.25 330 393,56 72.05 335 168.37 30.83 13.20 5.65 2.42 1.04 0.44 0.19 38.38 335 190.65 85.54 7.73 1.56 0.70 0.14 340 17.22 3.47 0.31 1625.37 340 596.67 219.04 3.98 345 80.41 29.52 10.84 1.46 0.54 0.20 4.72 0.87 0.38 842.94 345 350 351.13 145.88 2.02 11.05 25.05 350 355 392.36 68.07 2.05 163.41 0.36 28.36 11.82 4.92 0.86 0.15 379.79 355 360 81.19 175.26 37.75 17.62 8.25 3.88 1.83 0.87 0.41 FIRST HARMONIC AMPLITUDE 147.91 30712.2312881.13 5551.70 2472.50 552.65 279.41 81.79 47.06 1144.14 PHASE 1.54 1.68 1.85 2.53 3.07 2.05 2.27 2.79 3.35 3.61 (IN HOURS) SECOND HARMONIC AMPLITUDE 20845.49 8742.34 3785.39 1704.62 63.99 803.47 397.91 207.05 112.80 37.58 PHASE 1.95 1.61 1.76 2.89 2.17 2.40 3.13 3.34 3.55 2.65 (IN HOURS)

LEEDS

55

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

LEEDS GEDGRAPHIC LATITUDE = 53.82 GEDGRAPHIC LONGITUDE = 358.45 ASY.LONG. / BETA= +1.6 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 +1.4 190.65 38.38 0.70 85.54 17.22 7.73 3.47 1.56 0.31 0.14 1695.09 0.0 3.53 5.57 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 286.18 395.56 425.90 137.53 10 15 695.65 8.44 118.04 48.83 20.27 0.62 2212.19 13.00 20 934.41 71.38 1.03 167.83 30.43 25 19.94 9.49 4.56 20 2084.19 937.68 195.32 2.20 42.27 90.44 30.72 14.74 30 640.47 295.37 7.15 0.87 64.67 22.94 30 746,55 35 364.47 179.83 89.65 45.13 6.08 3.17 11.76 1.66 35 40 522.89 256.67 127.55 32.70 16.87 8.81 1.34 64.18 4.65 2.48 11.40 1876.35 387.91 21.96 40 45 844.58 182.24 6.06 3.29 43.33 1544.18 17.22 45 50 832.89 457.40 255.59 48.86 145.15 83.66 50 55 997.25 562.93 320.38 183.84 36.47 12.90 7.76 106.36 62.03 21.61 55 60 15.34 2286.52 1043.21 485.06 230.49 112.24 56.15 28.91 8.39 4.73 60 65 797.63 351.63 161.17 77.60 39.55 21.40 12.25 7.36 4.59 2.95 70 70 584.45 271.80 130.16 64.52 17.87 10.01 5.84 3.52 2.19 33.25 75 784.36 367.40 174.11 83.82 41.23 20.85 10.91 5.95 3.39 2.02 75 2.89 80 42.33 30.18 21.54 15.38 10.99 7.86 5.63 4.03 2.07 14.71 80 85 27.55 20.13 10.75 7.86 5.75 4.21 3.08 2.26 1.65 85 90 11.35 3.20 2.72 0.70 21.41 15.58 8.26 6.02 4.39 2.33 1.70 1.24 90 95 15.41 11.53 8.63 6.46 4.84 3.62 2.04 1.15 0.54 95 3.13 0.33 100 2.44 1.48 1.15 0.90 0.42 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.70 2.09 1.27 0.99 9.40 1.63 105 7.32 2.69 4.43 3.45 110 0.90 110 115 3.13 2.44 0.33 1.48 1.15 0.42 2.96 115 1.79 1.09 4.88 3.80 2.30 1.39 0.66 120 6.27 0.84 120 125 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 125 0.0 0.0 0.0 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.90 0.54 130 135 3.13 2.44 1.90 1.48 1.15 0.70 0.42 0.33 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 0.67 0.39 0.80 0.56 0.46 0.32 0.27 0.22 0.19 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.67 0.32 170 175 0.39 0.80 0.27 0.22 0.19 0.56 0.46 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 0.80 0.67 0.39 180 185 0.32 0.22 0.19 0.46 0.27 0.56 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.97 0.80 0.67 0.56 0.39 0.32 0.27 0.22 0.19 0.46 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.97 0.80 0.67 0.56 0.39 0.32 0.27 0.22 0.19 0.46 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 0.0 0.0 2.0 0.0 0.0 225 0.0 0.0 0.0 0.0 0.0 225 230 0.97 0.67 0.3 0.32 0.22 0.19 0.80 0.56 0.27 0.46 230 235 0.97 0.80 0.67 0.56 0.46 0.50 0.32 0.27 0.22 0.19 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 245 250 0.67 0.39 0.19 0.80 0.56 0.46 0.32 0.27 0.22 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 0.0 0.0 0.0 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 0.0 0.0 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 0.0 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.73 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 852.15 344.52 139.30 56.33 22.78 9.21 1.51 0.61 0.25 330 335 393,56 168.37 72.05 30.83 13.20 5.65 2.42 1.04 0.44 0.19 335 340 190.65 85.54 38.38 17.22 7.73 3.47 1.56 0.70 0.31 0.14 340 345 0.0 0.0 0.0 0.0 0.0 0.0 4.72 0.0 0.0 0.0 842.94 146.88 345 350 351.13 0.87 61.71 26.05 11.05 2.02 0.38 68.07 2.05 350 355 4.92 0.86 0.36 163.41 28.36 11.82 0.15 355 360 81.19 37.75 8.25 3.88 1.83 175.26 0.87 0.41 17.62 FIRST HARMONIC 17947.41 8241.65 3871.21 AMPLITUDE 926.78 251.99 138.27 45.90 475.18 78.43 1866.48 PHASE 2.33 2.10 3.70 3.04 3.48 2.21 2.65 2.84 3.26 2.48 (IN HOURS SECOND HARMUNIC AMPLITUDE 12640.88 5885.59 2809.42 1379.32 698.36 197.36 37.44 \$65.22 110.11 63.32 PHASE 2.22 2.47 2.34 2.61 2.76 2.93 3.10 IN HOURS

56

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

GEOGRAPHIC LATITUDE = 53.82 GEDGRAPHIC LONGITUDE = 358.45 ASY.LONG. BETA= +0.4 +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.2 0.0 -0. 190.65 38.38 0.70 85.54 1.56 0.31 0.14 17.22 7.73 3.47 0.0 0.0 0.0 0.0 10 0.0 87.12 0.0 0.0 0.0 0.0 10 15 186.53 19.00 1.94 0.20 40.69 8.88 4.15 0.42 15 20 509.40 8.33 1164.30 223.16 97.89 43.00 18.91 3.68 1.62 0.72 20 25 1427.77 319.71 8.37 673.67 152.61 73.26 35.36 17.16 4.11 2.02 25 30 444.73 214.87 104.42 51.05 25.12 12.44 6.20 3.11 1.57 0.80 30 35 746.55 179.83 11.76 6.08 364.47 89.65 45.13 22.94 3.17 1.66 32.70 4.65 35 40 522.89 256.67 127.55 64.18 16.87 8.81 2.48 1.34 40 45 1024.20 500.06 248.61 125.91 64.96 34.12 18.23 9.90 5.45 3.04 1544.18 45 50 55 832.89 457.40 255.59 145.15 83.66 48.86 28.86 17.22 10.36 50 562.93 320.38 183.84 106.36 62.03 36.47 21.61 12.90 7.76 345.77 54.98 97.05 55 60 1434.37 698.69 25.19 7.78 174.17 89.46 46.93 13.84 4.48 60 141.22 87.61 9.47 34.89 22.37 14.49 6.24 4.14 2.77 65 70 388.71 9.06 2.13 191.30 50.90 27.65 15.56 5.45 3.36 75 784.36 174.11 10.91 5.95 2.02 41.23 20.85 83.82 75 10.99 80 42.33 30.18 7.86 5.63 4.03 2.89 2.07 21.54 15.38 14.71 80 85 27.55 10.75 5.75 4.21 3.08 2.26 1.65 20.13 7.86 90 15.58 11.35 1.70 85 21.41 4.39 3.20 2.33 1.24 8.26 6.02 8.63 90 95 11.53 2.72 15.41 2.04 1.53 6.46 4.84 3.62 1.15 95 1.90 0.70 100 3.13 2.44 1.48 1.15 0.90 0.54 0.42 0.33 0.0 100 0.0 0.0 0.0 105 0.0 0.0 0.0 0.0 0.0 0.0 105 9.40 5.70 2.69 2.09 1.27 0.99 110 7.32 4.43 3.45 1.63 110 115 3.13 2.44 1.90 1.48 1.15 0.90 0.70 0,54 0.42 0.33 115 120 6.27 4.88 3.80 2.96 2.30 1.79 1.39 1.09 0.84 0.66 120 125 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 125 0.0 0.0 0.0 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 3.13 2.44 1.90 1.48 1.15 0.90 0.54 0.42 0.33 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 0.0 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 0.67 150 0.39 0.32 0.27 0.19 155 0.80 0.22 0.56 0.46 155 0.0 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.97 0.80 0.67 0.39 0.32 0.27 0.22 0.19 0.56 0.46 175 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.97 0.39 0.80 0.67 0.56 0.46 0.32 0.27 0.22 0.19 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.97 0.67 0.39 0.32 0.19 0.80 0.56 0.46 0.27 0.22 200 0.0 0.0 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.67 210 215 0.97 0.39 0.32 0.22 0.19 0.80 0.56 0.46 0.27 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.67 225 230 0.97 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 230 235 0.97 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.97 0.39 0.32 0.67 0.27 0.80 0.19 0.56 0.46 0.22 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 0.0 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 393.56 330 335 168.37 72.05 30.83 13.20 2.42 1.04 0.19 5.65 0.44 335 340 190.65 85.54 38.38 1.56 0.70 0.31 17.22 0.14 3.47 340 0.0 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 186.53 87.12 40.69 1.94 0.90 19.00 8.88 4.15 0.42 0.20 14.74 350 355 196.63 34.96 1.11 0.20 82.91 6.22 2.62 0.47 0.08 355 360 379.79 175.26 81.19 17.62 3.88 1.83 8.25 FIRST HARMONIC AMPLITUDE 757.47 407.87 44.29 11362.28 5596.04 2810.30 225.33 127.76 74.30 3.42 PHASE 2.47 2.57 2.67 2.79 2.93 3.08 3.24 3.60 3.80 (IN HOURS) SECOND HARMONIC AMPLITUDE 8657.51 4320.79 2199.53 1143.86 PHASE 2.57 2.67 2.76 2.87 184.77 61.67 36.87 608.46 331.33 105.51 2.99 3.11 3.25 3.38 3.52 3.66

LEEDS

57

80.00 GV

THE UPPER LIMIT FOR THIS CALCULATION IS

GEDGRAPHIC LATITUDE = 53.82 GEOGRAPHIC LONGITUDE = 358.45 ASY.LUNG./BETA= +1.6 +1.4 +1.2 +1.0 +0.8 +0.4 +0.2 0.0 -0.2 +0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 40.69 0.0 0.0 87.12 87.12 419.76 1.94 10 0.0 0.0 0.0 0.0 0.0 0.0 10 19.00 8.88 4.15 0.20 0.42 15 186.53 0.90 40.69 8.88 52.33 17.39 20 19.00 3.35 4.15 0.20 843,56 20 209.29 104.55 26.25 13.19 6.64 1.69 25 254.09 129.33 30 66.04 33.83 8.97 4.65 2.41 2.97 0.66 30 35 549.93 144.87 281.56 74.91 38.92 20.32 5.61 10.65 35 325.96 90.47 40 171.22 48.09 25.72 13.84 7.49 4.08 2.24 1.23 77.86 40 45 440.00 246.15 138.19 2.71 44.04 25.00 14.25 8.16 4.69 45 50 1353,53 747.35 419.03 238.37 137.42 47.30 16.91 80.19 28.17 10.22 997.26 106.36 50 55 562.93 320.38 183.84 62.03 36.47 21.61 12.90 235.34 55 60 850.16 444.78 126.11 68.53 37.82 21.21 12.10 7.03 60 65 70 141.22 87.61 34.89 22.37 14.49 9.47 6.24 2.77 4.14 192.08 65 62.09 108.39 36.16 21.44 12.94 7.96 4.98 3.17 2.04 396.78 42.33 27.55 98.65 21.54 14.71 11.35 70 75 26.52 1.77 196.40 50.51 14.35 8.04 4.68 2.83 75 80 30.18 15.38 7.86 5.63 4.03 2.89 2.07 10.75 80 85 5.75 2.26 20.13 7.86 4.21 3.08 2.33 1.65 90 21.41 6.02 4.39 8.26 1.24 3.20 15.41 11.53 90 95 8.63 4.84 0.42 1.48 3.62 2.72 2.04 0.33 95 100 3.13 2.44 100 0.0 0.0 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 9.40 1.27 105 5.70 0.99 110 7.32 4.43 3.45 2.69 2.09 1.63 110 3.13 1.90 1.15 0.54 0.33 115 2.44 1.48 0.90 0.70 0.42 1.09 115 6.27 4.88 3.80 2.96 2.30 1.79 0.84 120 1.39 0.66 120 125 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 3.13 2.44 1.90 1.48 1.15 0.90 0.70 0.54 0.42 0.33 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.67 150 155 0.97 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 155 0.0 0.0 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 0.0 0.0 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 0.0 0.0 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.97 170 175 0.67 0.80 0.39 0.19 0.32 0.27 0.22 0.56 0.46 175 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.97 0.80 0.67 0.39 0.22 0.56 0.32 0.27 0.19 0.46 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.97 0.67 0.80 0.56 0.46 0.39 0.32 0.27 0.22 0.19 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.97 0.80 0.67 0.39 0.19 0.56 0.46 0.32 0.22 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.97 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 0.97 230 235 0.80 0.67 0.56 0.46 0.39 0.32 0.27 0.22 0.19 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.97 0.67 0.80 0.39 0.56 0.46 0.32 0.27 0.22 0.19 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 295 300 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 110 0.0 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 1.94 345 186.53 87.12 40.69 19.00 8.88 4.15 0.90 0.42 0.20 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 182.86 89.80 44.10 21.66 10.64 5.22 2.57 0.62 0.30 1.26 FIRST HARMONIC AMPLITUDE 6798.94 956.92 195.88 3622.08 1073.44 598.44 339.36 115.12 68.90 41.98 PHASE 2.88 2.95 3.03 3.91 3.12 3.22 3.11 3.75 IN HOURS SECOND HARMONIC AMPLITUDE 5738.09 3074.95 1669.69 919.47 513.90 291.73 168.30 98.72 58.90 35.75 PHASE 2.92 2.98 3.05 3.40 3.13 3.21 3.30 3.51 3.62 (IN HOURS)

LEEDS

THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

				LEEDS							
ASY.L	ONG./B	GEDGRAPHI ETA= +1.6	C LATITU)DE = 5 +1.2	3.82 GE +1.0	DGRAPHIC +0.8	+0.6	DE = 351 +0.4	+0.2	0.0	-0.2
0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20	25	291.32	153.03	80.39	42.23	22.18	11.65	6.12	3.22	1.69	0.89
25 30	30 35	71.23	39.53	21.94	12.17	6.76	3.75	2.08	1.15	0.64	0.36
35	40	363.40	81.41	104.18	55.90 26.43	30.04	16.17 8.62	8.72	2.82	1.62	0.93
40	45	440.00	246.15	138.19	77.86	44.04	25.00	14.25	8.16	4.69	2.71
45 50	50 55	797.62	483.31	293.55 276.27	178.70 162.18	109.03 95.72	66.68 56.81	40.86	25.10	15.45	9.53 7.45
55	60	480.77	267.86	150.55	85.45	49.02	28.45	16.71	9.94	5.98	3.65
60	65 70	141.22	87.61	54.98 62.09	34.89	22.37	14.49	7.96	6.24	4.14	2.77
70	75	27.40	19.48	13.85	36.16 9.85	7.00	12.94	3.54	2.52	3.17	2.04
75	80	42.33	30.18	21.54	15.38	10.99	7.86	5.63	4.03	2.89	2.07
80 85	85 90	27.55	20.13	14.71	8.26	7.86 6.02	5.75	4.21 3.20	2.33	2.26	1.65
90	95	15.41	11.53	8.63	6.46	4.84	3.62	2.72	2.04	1.53	1.15
100	100	3.13	2.44	1.90	1.48	1.15	0.90	0.70	0.54	0.42	0.33
105		9.40	7.32	5.70	0.0	3.45	2.69	2.09	0.0	0.0	0.99
110		3.13	2.44	1.90	1.48	1.15	0.90	0.70	0.54	0.42	0.33
115		0.0	4.88 0.0	3.80	2.96	2.30	1.79	0.0	0.0	0.84	0.66
125	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
130		3.13	2.44	1.90	0.0	0.0	0.90	0.70	0.54	0.42	0.33
140		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
145		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150 155		0.97	0.80	0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
160	165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.19
175	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180		0.97	0.80	0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
185		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
195	200	0.97	0.80	0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
200		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210	215	0.97	0.80	0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
215		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225		0.97	0.0	0.0	0.0	0.46	0.0	0.32	0.27	0.22	0.19
230		0.97	0.80	0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
235		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245	250	0.97	0.80	0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
250	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	265	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280	285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295	300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300		0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0
310	315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345	350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350 355		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HARMO	1.IC			0.0	0.0	0.0	0.0	0.0	0.0	0.0
AMPLI				1266.87	743.83	441.07	264.29	160.10	98.10	60.81	38.15
(IN F	OURS	3.27	3.31	3.37	3.43	3.51	3.59	3.69	3.80	3.93	4.07
SECON	O HARM										
AMPLI		3483.32	3.29	3,33	678.86	3.44	238.20 3.51	3.58	3.67	3.76	33.23
(IN F	OURS						2.00	2.20	,,,,,	20	
THE	IPPER L	IMIT FOR TH	IS CALCI	JLATION 1	5 29.00	GV					

DULU GEDGRAPHIC LATITUDE = 65.00 GEDGRAPHIC LONGITUDE = 25.42 ASY. LONG . / BETA = +1.6 +1.0 +0.8 +0.4 +0.2 0.0 -0.2 +1.4 +0.6 884.93 9356.05 2874.02 0.25 273.14 84.52 26.22 8.15 2.54 0.79 4740.96 1654.46 586.91 4.44 1.83 0.57 1.79 0.74 10 211.97 78.06 29.35 11.28 10 2622.00 312.82 902.16 13.82 5.00 0.68 109.44 38.67 195.45 36.80 15.97 84.81 6.93 0.25 0.11 20 1.30 3.01 84.89 25 189.21 38.09 0.31 0.14 17.09 1.54 0.69 7.67 3.44 797.91 27.01 30 2599.40 250.03 9.48 3.50 1.36 0.56 0.24 80.64 30 35 6140.61 2043.29 683.01 229.38 77.40 8.94 3.06 1.05 0.36 26.24 35 10675.51 3.79 40 3601.10 1237.48 434.91 157.02 58.51 22.50 9.07 1.64 40 45 12494.08 599.26 36.80 4426.81 1607.46 229.69 90.60 15.40 6.63 2.94 791.23 358.26 0.91 45 50 163.63 3.79 75.44 35.13 16.53 7.87 1.85 50 55 1502.48 684.90 318.00 150.52 72.67 35.77 17.94 9.15 4.75 2.50 4.48 55 60 520.34 292.05 166.61 96.44 56.55 33.53 20.06 12.10 7.35 1457.33 803.97 7617.18 2537.17 3759.96 1598.45 60 65 451.35 257.33 148.72 86.99 51.42 30.69 18.47 11.20 65 70 889.15 336.61 141.28 66.57 34.89 19.86 11.95 7.46 75 70 705.20 325.91 159.17 82.64 45.67 26.74 16.46 10.54 75 80 727.83 348.19 170.82 86.54 45.60 25.16 14.58 8.88 5.67 3.76 80 85 776.78 197.82 390.40 101.34 52.68 27.94 15.22 8.57 5.03 3.09 90 574.79 85 25.81 260.33 118.74 54.81 12.56 9.74 3.54 2.13 1.40 90 95 2656.98 1018.88 59.52 392.41 152.07 23.70 4.24 2.03 1.10 1.51 95 100 7086.35 715.19 77.33 2238.52 232.33 26.65 7.63 3.69 0.67 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.19 105 181.48 89.13 43.77 110 21.50 2.55 0.61 10.56 1.25 0.30 110 115 0.08 0.07 0.07 0.05 0.04 0.04 0.04 0.06 0.06 0.05 185.59 115 86.89 40.78 19.22 9.14 1.16 0.42 120 4.42 2.21 0.66 120 125 0.15 0.09 0.07 0.14 0.13 0.12 0.11 0.10 0.10 0.08 125 130 189.21 38.09 84.89 17.09 7.67 3.44 1.54 0.69 0.31 0.14 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195.45 135 140 84.81 36.80 15.97 6.93 3.01 1.30 0.57 0.25 0.11 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 195.14 82.29 34.70 14.63 6.17 2.60 1.10 0.46 0.20 0.08 150 155 155 160 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 194.26 32.86 79.89 13.51 5.56 2.29 0.39 0.16 0.07 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 42.39 170 175 651.45 105.39 262.03 17.05 6.85 2.76 1.11 0.45 0.18 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 225 230 1613.11 592.17 217.38 79.80 29.29 3.95 10.75 1.45 0.53 0.20 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 250 0.01 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 2232.59 739.98 81.29 245.26 26.94 8.93 2.96 0.98 0.33 0.11 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2294.91 260 265 711.13 220.36 68.28 21.16 6.56 2.03 0.63 0.20 0.06 265 270 2414.28 711.46 209.66 61.79 18.21 5.37 1.59 0.05 0.47 0.15 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 8554.89 2754.74 1236.31 509.02 892.66 209.75 340 345 291.16 95.60 31.61 10.52 3.53 1.19 0.40 345 350 509.02 35.71 86.50 6.10 2.52 1.05 0.43 84.89 350 355 189.21 38.09 17.09 1.54 7.67 3.44 0.69 0.31 0.14 355 360 86.46 1.92 185.17 40.38 18.86 A . 81 4.11 0.90 0.42 0.20

(IN HOURS)
THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

0.78

1.17

41228.9514800.40 5571.98 2234.83

0.61

1.05

65596.1523233.56 8598.30 3364.30 1407.44

1.00

1.33

1.25

1.53

FIRST HARMONIC

AMPLITUDE

PHASE

(IN HOURS) SECOND HARMONIC

AMPLITUDE

PHASE

1.52

969.27

1.76

308.30

234.85

2.21

2.06

160.85

129.08

2.39

2.28

634.25

1.80

457.99

1.99

89.30

2.46

74.94

2.54

52.23

45.41

2.67

2.61

DULU GEDGRAPHIC LATITUDE = 65.00 GEDGRAPHIC LONGITUDE = ASY.LONG./BETA: +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 366.55 10 2446.05 943.32 143.69 56.90 22.80 9.25 3.81 1.59 0.68 10 389.40 4.89 0.85 15 162.18 28.14 11.73 2.04 0.35 0.15 15 195.45 36.80 1.30 20 0.25 84.81 15.97 6.93 3.01 0.11 20 25 189.21 38.09 0.69 84.89 17.09 7.67 3.44 0.14 185.12 40.38 1.92 0.90 30 86.46 18.86 0.42 0.20 8.81 4.11 30 10.75 3.95 0.53 35 1613.11 592.17 217.38 1.45 79.80 29.29 0.20 35 3733.74 40 1438.53 562.20 223.55 90.71 37.66 16.03 7.00 3.13 1.43 40 5552.30 2264.25 932.18 30.23 5.97 2.73 387.91 163.38 69.75 13.32 791.23 3.79 0.91 45 163,63 7.87 1.85 50 358.26 35.13 16.53 9.15 50 55 1502.48 684.90 318.00 150.52 72.67 35.77 17.94 4.75 2.50 55 60 520.34 292.05 166.61 33.53 20.06 7.35 96.44 56.55 12.10 1457.33 803.97 675.40 374.61 3759.96 1598.45 60 65 451.35 257.33 148.72 86.99 51.42 30.69 18.47 11.20 65 70 213.87 125.25 74.97 45.72 28.32 17.78 11.29 7.25 70 75 705.20 325.91 159.17 82.64 45.67 26.74 16.46 10.54 75 80 727.83 348.19 170.82 86.54 45.60 25.16 14.58 8.88 5.67 3.76 80 197.82 15.22 85 776.78 390.40 101.34 52.68 27.94 8.57 5.03 3.09 85 90 574.79 3.54 260.33 118.74 54.81 25.81 12.56 6.44 2.13 1.40 2656.98 1018.88 90 95 392.41 9.74 4.24 2.03 152.07 59.52 23.70 1.10 95 144.58 39.91 3.05 0.46 100 75.95 0.86 20.97 5.80 1.61 11.02 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 43.77 105 110 181.48 89.13 5.19 2.55 1.25 0.30 21.50 10.56 0.61 0.05 110 115 0.08 0.07 0.04 0.04 0.04 0.07 0.06 0.05 0.05 115 185.59 19.22 120 86.89 40.78 9.14 2.21 1.16 0.66 0.42 4.42 0.07 120 125 0.15 0.14 0.13 0.10 0.10 0.09 0.08 0.12 0.11 125 130 189.21 84.89 38.09 1.54 0.31 17.09 7.67 3.44 0.69 0.14 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.11 135 140 195.45 84.81 36.80 15.97 6.93 3.01 1.30 0.57 0.25 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 195.14 82.29 34.70 14.63 6.17 2.60 1.10 0.46 0.20 0.08 150 155 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 194.26 155 79.89 160 32.86 13.51 5.56 2.29 0.39 0.16 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 0.0 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 105.39 42.39 2.76 0.45 0.18 651.46 17.05 262.03 6.86 1.11 175 0.0 0.0 0.0 0.0 180 0.0 0.0 0.0 0.0 0.0 0.0 180 0.0 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 225 230 1613.11 592.17 217.38 79.80 10.75 3.95 0.53 0.20 29.29 1.45 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.01 0.02 0.02 0.02 0.02 0.02 0.02 0.02 0.02 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 320 325 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10.75 3.95 0.53 340 345 1613.11 592.17 29.29 2.52 217.38 79.80 0.20 345 350 1236.31 509.02 209.75 35.71 14.75 6.10 1.05 86.50 0.43 38.09 350 355 189.21 84.89 17.09 7.67 1.54 0.69 0.31 3.44 0.14 355 360 0.20 185.12 86.46 40.38 18.86 8.81 4.11 0.42 FIRST HARMONIC AMPLITUDE 25062.1510767.43 4771.58 2192.39 1049.29 524.89 150.60 86.14 51.25

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

1.71

1.58

1.82

1.73

17694.98 7570.00 3370.83 1573.52 773.55

1.95

1.89

1.60

1.45

PHASE

(IN HOURS) SECOND HARMONIC

AMPLITUDE

PHASE

(IN HOURS)

2.08

2.05

2.21

400.79

2.21

2.33

218.24

2.35

2.45

124.25

2.48

2.57

73.53

2.59

2.67

44.99

2.70

DULU GEUGRAPHIC LATITUDE = 65.00 GEOGRAPHIC LONGITUDE = 25.42 ASY.LONG. BETA: +1.6 0.0 -0.2 +1.4 +1.2 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 351.15 162.18 149.16 832.94 63.89 5.30 2.36 0.48 27.61 12.04 1.06 10 10 389.40 28.14 4.89 2.04 0.35 15 195.45 36.80 6.93 1.30 0.57 0.25 20 84.81 15.97 3.01 0.11 189.21 84.89 20 25 38.09 17.09 7.67 1.54 0.69 0.31 0.14 3.44 8.81 25 30 185.12 40.38 1.92 0.90 0.42 0.20 86.46 18.86 4.11 30 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 35 40 507.52 254.19 127.43 63.95 32.12 16.15 8.13 2.07 1.04 4.10 134.08 40 45 3939.19 1672.08 714.80 308.10 58.99 26.28 11.87 5.44 2.54 7.87 1.85 45 50 791.23 358.26 163.63 75.44 35.13 16.53 3.79 0.91 17.94 50 35.77 9.15 2.50 55 1502.48 684.90 318.00 150.52 72.67 55 20.06 60 520.34 1457.33 292.05 166.61 96.44 56.55 33.53 12.10 7.35 4.48 60 803.97 51.42 65 451.35 257.33 148.72 85.99 30.69 18.47 11.20 675.40 374.61 65 11.29 70 213.87 125.25 74.97 45.72 28.32 7.25 2146.85 1006.28 70 75 487,82 246.11 129.88 71.89 41.72 25.29 15.92 10.34 727.83 75 80 348.19 170.82 45.60 25.16 14.58 8.88 5.67 3.76 86.54 80 85 776.78 197.82 52.68 27.94 15.22 8.57 5.03 3.09 390.40 101.34 85 90 574.79 260.33 118.74 25.81 12.55 5.44 3.54 2.13 1.40 54.81 90 95 1043.87 5.80 0.90 175.03 72.27 12.95 2.79 1.49 426.71 30.22 95 100 0.46 144.58 75.95 39.91 20.97 11.02 5.80 3.05 0.86 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 105 110 181.48 5.19 2.55 0.30 89.13 43.77 0.61 21.50 10.56 1.25 110 115 0.08 0.07 0.07 0.06 0.05 0.04 0.04 0.04 0.06 0.05 115 120 0.42 185.59 86.89 40.78 19.22 9.14 2.41 0.66 4.42 1.16 120 125 0.15 0.14 0.13 0.12 0.11 0.10 0.10 0.09 0.08 0.07 189.21 7.67 125 130 84.89 38.09 17.09 3.44 1.54 0.69 0.31 0.14 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.30 0.25 135 140 195.45 6.93 0.57 84.81 35.80 15.97 3.01 0.11 140 145 0.0 0.0 34.70 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195.14 82.29 6.17 145 150 14.63 2.60 1.10 0.46 0.20 0.08 0.01 150 155 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 155 160 194.26 79.89 5.56 2.29 0.94 0.39 0.16 0.07 32.86 13.51 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 65 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 651.46 105.39 2.76 42.39 17.05 0.45 0.18 262.03 5.85 1.11 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.02 0.02 0.02 0.02 240 245 0.01 0.01 0.02 0.02 0.02 0.02 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.01 280 285 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.7 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.05 345 350 1236.31 509.02 209.75 86.50 35.71 14.75 6.10 2.52 0.43 84.89 350 355 189.21 38.09 17.09 7.67 3.44 1.54 0.69 0.31 0.14 355 360 185.12 86.46 40.38 18.86 8.81 1.92 0.90 0.42 0.20 4.11 FIRST HARMONIC AMPLITUDE 15998.81 7462.96 3568.15 253.91 1754.63 890.23 467.15 143.00 83.38 50.26 PHASE 2.71 2.20 2.40 2.55 2.15 2.33 2.48 2.63 2.2 IN HOURS SECOND HARMONIC 9962.49 4803.75 2389.02 1227.82 AMPLITUDE 652.66 358.73 203.64 119.19 71.78 44.39 2.07 PHASE 1.85 1.96 2.29 2.18 7.38 2.48 2.57 2.65 2.73 (IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

GEOGRAPHIC LATITUDE = 65.00 GEOGRAPHIC LONGITUDE = 14 + 1.6 + 1.4 + 1.2 + 1.0 + 0.8 + 0.6 + 0.6 25.42 ASY.LUNG./BETA= +1.6 +0.6 +0.4 +0.2 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.0 0.0 43.77 181.48 2.55 1.10 1.30 10 89.13 21.50 5.19 10.56 1.25 0.61 0.30 6.17 2.60 0.46 0.20 0.08 195.45 15 20 36.80 15.97 84.81 3.01 0.25 0.11 189.21 20 25 84.89 33.09 17.09 7.67 1.54 3.44 0.69 0.31 0.14 40.38 25 185.12 1.92 30 86.46 18.86 8.81 4.11 0.90 0.42 0.20 30 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 507.52 63.95 16.15 2.07 35 40 254.19 127.43 32.12 8.13 4.10 1.04 40 45 1596.29 726.22 332.91 153.91 71.82 33.85 15.13 7.77 3.79 1.87 596.97 1.69 45 50 278.37 130.78 61.93 29.57 6.93 0.85 14.25 3.41 4.30 50 55 851.02 422.87 212.61 108.14 55.62 28.91 15.18 8.04 2.32 55 4.48 60 520.34 292.05 166,61 96.44 56.55 33.53 20.06 12.10 7.35 60 65 1263.07 724.08 418.49 243.81 143.16 84.70 50.48 30.30 18.31 11.14 65 213.87 70 675.40 374.61 125.25 74.97 45.72 28.32 17.78 11.29 1301.12 107.27 23.79 664.36 190.21 62.75 38.02 15.32 10.10 170.82 75 727.83 80 348.19 14.58 8.88 86.54 45.60 25.16 5.67 3.76 80 197.82 27.94 85 390.40 8.57 52.68 15.22 101.34 5.03 3.09 85 90 574.79 25.81 3.54 118.74 54.81 260.33 12.55 5.44 2.13 1.40 90 95 198.15 84.79 36.78 16.37 7.61 3.80 2.10 1.30 0.89 0.66 75.95 39.91 95 100 144.58 20.97 11.02 5.80 3.05 1.61 0.86 0.46 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.55 105 181.48 89.13 43.77 21.50 5.19 110 10.56 0.30 1.25 0.61 110 115 0.08 0.07 0.07 0.05 0.04 0.06 0.06 0.04 0.05 0.04 115 120 185.59 86.89 40.78 9.14 19.22 4.42 2.21 0.66 0.42 1.16 120 125 0.15 0.13 0.11 0.14 0.12 0.10 0.10 0.09 0.08 0.07 125 130 189.21 38.09 84.89 17.09 7.67 1.54 3.44 0.69 0.31 0.14 0.0 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 36.80 15.97 135 140 195.45 84.81 6.93 3.01 1.30 0.57 0.25 0.11 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195.14 82.29 14.63 6.17 145 150 34.70 2.60 1.10 0.46 0.20 0.08 0.01 150 155 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.01 0.02 0.02 0.02 0.02 0.02 0.07 0.02 0.02 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.01 0.01 0.01 0.01 0.01 0.0 0.01 0.0 0.01 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.01 290 295 0.01 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 71.50 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 390.59 2.40 167.10 30.50 13.10 5.61 1.03 0.44 0.19 84.89 189.21 38.09 350 355 17.09 7.67 3.44 0.69 0.31 0.14 355 360 185.12 40.38 96.40 18.86 8.81 4.11 1.92 0.90 0.42 0.20 FIRST HARMONIC 10660.11 5307.37 2697.97 AMPLITUDE 133.72 1403.44 748.53 410.00 230.87 79.64 48.7 2.37 PHASE 2.30 2.33 2.55 2.41 2.61 2.68 2.75 2.45 2.50 (IN HOURS SECOND HARMONIC 7154.58 3703.30 1958.95 1060.14 AMPLITUDE 587.41 333.38 193.81 43.82 115.38 70.31 PHASE 2.30 2.34 2.39 2.43 2.48 2.53 2.59 2.64 2.70 2.76 (IN HOURS

DULU

THE UPPER LIMIT FOR THIS CALCULATION IS 80.00 GV

DULU GEOGRAPHIC LATITUDE = 65.00 GEOGRAPHIC LONGITUDE = 25.42 ASY.LONG. BETA - +1.6 +1.2 +0.4 0.0 -0.2 +1.4 +1.0 +0.8 +0.6 +0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 181.48 89.13 43.77 21.50 10.56 5.19 2.55 1.25 0.61 0.30 10 . 5 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 8.81 30 185.12 86.46 40.38 1.92 0.90 0.20 18.86 4.11 0.42 30 35 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 127.43 113.73 35 254.19 40 507.52 63.95 32.12 16.15 8.13 4.10 2.07 1.04 436.69 40 45 222.23 58.53 30.28 15.75 8.24 4.33 2.28 1.21 45 50 401.82 196.08 96.08 47.29 23.40 11.65 5.83 2.94 1.50 0.77 3.74 50 55 6.79 466.37 137.72 75.08 2.07 253.17 41.02 22.46 12.33 520.34 33.53 60 292.05 166.61 96.44 56.55 20.06 12.10 7.35 4.48 418.49 60 65 1263.07 724.08 84.70 50.48 243.81 143.16 30.30 18.31 11.14 70 292.32 27.22 17.32 480.26 179.17 68.80 43.12 7.16 110.62 11.10 910.53 94.17 70 75 497.26 278.07 159.61 57.14 35.62 22.77 14.88 9.91 153.96 6.93 75 80 93.59 57.84 23.34 15.27 10.19 4.80 3.38 36.39 80 85 776.78 390.40 197.82 52.68 27.94 15.22 8.57 5.03 3.09 101.34 90 190.13 90.63 43.85 2.29 1.58 21.75 11.21 6.12 1.16 90 95 1.00 3.01 2.50 2.08 1.73 1 . 44 1.20 0.83 0.69 0.58 3.05 95 100 144.58 75.95 39.91 20.97 11.02 5.80 1.61 0.86 0.46 100 105 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 181.48 43.77 5.19 105 110 89.13 2.55 21.50 10.56 1.25 0.61 0.30 0.06 110 115 0.08 0.07 0.07 0.05 0.05 0.04 0.04 0.04 0.06 115 120 185.59 86.89 40.78 19.22 9.14 4.42 2.21 1.16 0.66 0.42 120 125 0.15 0.14 0.13 0.12 0.11 0.10 0.10 0.09 0.08 0.07 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 0.0 0.0 0.0 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 135 140 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 150 0.01 155 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.01 0.02 0.02 0.02 0.02 50.0 0.02 0.01 0.02 0.02 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.01 0.01 0.0 0.01 0.01 0.01 0.01 0.01 0.01 0.01 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.01 280 285 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 40.38 1.92 0.90 185.12 86.46 A.81 0.42 0.20 18.86 4.11 FIRST HARMONIC AMPLITUDE 121.73 6615.42 3549.04 1933.18 1070.53 346.89 203.38 74.42 603.64 PHASE 2.44 2.58 2.78 2.46 2.48 2.51 2.54 2.62 2.72 IN HOURS SECOND HARMUNIC 5268.09 2885.92 1604.74 304.57 AMPLITUDE 906.64 520.90 181.34 109.99 67.98 PHASE 2.48 2.50 2.52 2.54 2.57 2.60 2.64 2.68 2.73 2.79 (IN HOURS)

64

THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

٧. ٤	UNG.	GEOGRAPHI BETA: +1.6	+1.4	JDE = 6 +1.2	+1.0	+0.8	+0.6	DE = 2		0.0	-0
0	5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
5	10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
10	15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.
15	20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
20	30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
30	35	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0	0
35	40	144.56	75.94	39.89	20.96	11.01	5.78	3.04	1.60	0.84	C
40	45		135.77		39.67	21.48	11.64	6.31	3.43	1.86	1
45	50	35.22 466.37	20.49		6.94	4.04	2.35	1.37	0.79	0.46	C
50 55	5 5		253.17		75.08	41.02	22.46	12.33	6.79	6.93	2
60	65	1081.60	634.96		222.32	132.60	79.52	47.94	29.05	17.70	10
65	70	480.26	292.32	179.17	110.52	68.80	43.12	27.22	17.32	11.10	7
70	75		321.68		119.25	74.81	47.84	31.15	20.62	13.84	9
75 80	80	153.96	93.59		36.39	23.34	15.27	10.19	6.93	4.80	3
85	90	228.70 5.01	125.69	69.89 3.47	39.48	22.76	2.00	1.67	5.17	3.38	2
90	95	3.01	2.50	2.08	1.73	1.44	1.20	1.00	0.83	0.69	0
	100	144.58	75.95	39.91	20.97	11.02	5.80	3.05	1.61	0.86	0
	105	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	110	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	115	0.08	0.07	0.07	0.06	0.06	0.05	0.05	0.04	0.04	0
	125	0.15	0.14	0.13	0.12	0.11	0.10	0.10	0.09	0.08	0
	130	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	135	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	140	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	155	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
	160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	o
	190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	195	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
	200	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	215	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
15	220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	225	0.01	10.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	C
	230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	245	0.01	0.01	0.02	0.02	0.02	2.02	0.02	0.02	0.02	0
	250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	O
	260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	265	0.0	0.01	0.01	0.01	0.0	0.01	0.0	0.0	0.0	0
	275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C
75	280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	285	0.0	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
	290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	295	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0
	305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
40	345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	355	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	360 HAR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0
	TUDE	3780.15	2190.58	1281.94	758.26	453.73	274.92	168.81	105.12	66.44	42
PHA	SE	2.55	2.57	2.58	2.50	2.62	2.65	2.68	2.72	2.77	5
	OURS										
	TUDE	RMUNIC 3513-10	2063 07	1200.63	712 42	637 73	250 12	159.85	00.40	43.63	
	SE	2.55	2.56	2.58	712.62	2.62	259.83	2.68	2.72	2.76	40.
	OURS		6								

PIC DU MINI GEDGRAPHIC LATITUDE = 42.93 GEDGRAPHIC LONGITUDE = ASY.LUNG./BETA= +1.2 +1.6 +1.4 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 7792.34 2452.45 776.15 79.37 0.94 247.24 25.71 8.42 2.79 0.32 12758.09 4046.58 1289.04 15240.26 5224.41 1813.71 1.56 10 412.71 132.94 43.13 14.12 4.67 2.42 638.89 84.05 795.63 3.37 1.38 20 5083.30 2007.24 126.51 50.76 20.45 8.28 316.61 20 1823.90 320.38 0.77 763.81 134.60 56.64 23.87 10.08 4.26 1.81 1.53 9074.62 3038.81 1044.90 370.70 136.20 51.93 20.54 3.55 30 35 2613.23 1037.19 418.19 171.64 71.84 13.41 5.98 2.72 30.71 35 40 2036.64 870.99 376.12 72.46 32.37 14.64 6.70 3.11 164.15 1.77 40 45 1405.27 646.40 299.92 140.39 66.30 31.58 15.18 7.35 3.59 16.75 45 50 8375.99 2732.40 911.85 313.73 112.29 42.19 7.05 3.13 1.46 50 55 2837.23 495.66 44.77 21.27 5.16 1170.56 215.92 96.89 10.36 2.62 55 337.42 15.3A 1.90 60 1753.71 7.49 763.94 151.44 69.22 32.28 60 1411.00 11.53 6.06 22.15 3.22 686.90 168.14 84.60 43.05 70 65 393.15 198.39 13.85 7.27 2.06 51.59 100.80 3.85 26.62 70 257.70 75 463.34 143.71 45.06 14.29 8.08 4.59 2.61 80.36 25.34 75 378.91 39.11 4.31 80 213.44 120.73 68.57 12.88 7.43 2.51 22.40 80 85 137.71 48.92 3.76 82.03 29.21 17.46 10.45 6.26 2.26 1.36 85 181.91 62.89 21.96 7.74 2.75 90 106.83 37.12 13.02 4.61 1.64 14.07 90 95 246.68 94.28 8.78 5.49 152.36 58.45 36.30 22.58 3.44 22.89 95 100 9.30 5.93 1.54 0.98 0.62 0.40 100 3.73 105 152.26 95.10 59.53 37.34 23.47 14.78 9.32 5.89 2.37 2.47 105 110 90.65 57.36 36.38 23.12 14.72 9.39 6.01 3.85 1.59 110 115 143.99 93.67 61.00 39.78 25.97 16.97 11.11 7.28 3.13 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 57.96 37.74 24.58 16.02 10.44 6.81 4.44 2.90 1.89 1.24 125 130 52.76 35.61 24.04 10.96 5.00 1.54 3.38 2.28 16.23 7.40 130 135 7.51 4.90 3.19 0.38 11.53 2.08 1.36 0.88 135 140 35,39 11.05 3.45 2.35 1.59 1.08 5.09 16.28 7.50 24.00 1.91 0.90 140 145 18.01 8.52 4.03 2.77 1.31 12.39 0.62 5.86 1.43 145 150 35,35 17.29 5.92 4.15 2.90 2.04 12.09 8.46 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7.76 5.19 2.32 155 160 17.37 11.61 3.47 1.55 1.03 0.69 0.46 1.91 160 8.52 5.86 4.03 2.77 0.90 165 18.01 1.3! 0.62 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 18.01 12.39 8.52 5.86 4.03 2.77 1.91 1.31 0.90 0.62 180 185 18.01 12.39 8.52 5.86 4.03 2.77 1.91 1.31 0.90 0.62 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 8.77 3.15 17.34 12.33 6.23 4.43 2.24 1.59 1.13 0.81 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 270 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 3.15 17.34 12.33 8.77 2.24 1.59 1.13 0.81 6.23 4.43 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7572.77 1805.53 325 330 7.18 2359.86 737.11 230.78 72.42 22.78 2.27 0.72 0.23 330 335 32.79 662.81 243.31 89.32 12.04 4.47 1.62 0.60 0.22 335 340 950.49 950.49 384.30 5561.32 1735.36 155,39 67.84 25.41 10.28 4.16 1.68 0.68 0.28 2.35 340 345 548.19 175.90 57.55 19.27 8.95 0.86 0.32 345 350 7790.00 2457.33 780.84 81.23 26.73 3.06 1.08 0.39 250.40 350 355 243.31 1805.53 662.81 89.32 32.79 4.47 1.62 0.22 0.60 12.04 355 360 6214.04 2061.36 696.22 84.54 11.28 239.94 4.27 1.66 0.66 30.50 FIRST HARMONIC AMPLITUDE 96002.8933102.7011740.36 4314.43 1658.62 293.91 137.98 69.69 37.48 674.81 PHASE 0.81 4.35 4.93 0.98 1.21 1.53 3.06 3.71 1.94 2.45 (IN HOURS) SECOND HARMONIC 71132.6623756.71 8045.19 2767.70 AMPLITUDE 970.81 350.28 132.73 54.90 25.83

66

1.56

1.97

2.52

3.22

1.25

3.99

PHASE

(IN HOURS)

0.71

0.84

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

1.02

PIC DU MIDI GEOGRAPHIC LATITUDE = 42.93 GEOGRAPHIC LONGITUDE = 0.25 ASY.LONG. BETA: +1.6 +1.2 +0.8 +1.4 +1.0 +0.4 +0.2 +0.6 0.0 -0.2 219.58 92.59 39.04 6.94 2.93 1.23 0.52 0.22 0.09 16.46 1.46 218.30 94.73 10 41.11 17.84 7.74 0.27 3.36 0.63 0.12 7667.50 2.19 10 15 2864.55 1076.60 408.11 156.66 10.33 4.59 15 20 5083.30 2007.24 795.63 20.45 316.61 126.51 50.76 8.28 3.37 1.38 20 134.60 25 1823.90 763.81 320.38 56.64 23.87 10.08 4.26 1.81 0.77 25 30 1501.85 678.95 307.79 139.92 63.78 29.15 13.36 6.14 1.30 30 35 2613.23 1037.19 418.19 171.64 71.84 13.41 5.98 2.72 30.71 1.26 376.12 35 40 2036.64 870.99 164.15 72.46 32.37 14.64 6.70 3.11 1.46 40 45 1405.27 646.40 140.39 66.30 31.58 15.18 7.35 3.59 1.77 45 174.74 50 803.23 372.53 82.95 39.87 19.41 9.57 4.78 2.41 1.23 495.66 50 2837.23 1170.56 21.27 215.92 96.89 44.77 10.36 5.16 2.62 337.42 55 1753.71 15.38 60 763.94 151.44 69.22 32.28 7.49 3.73 1.90 60 1411.00 686.90 168.14 84.60 43.05 22.15 11.53 6.06 3.22 70 65 198.39 783.99 13.85 393.15 100.80 51.59 26.62 7.27 3.85 2.06 257.70 70 75 463.34 143.71 4.59 80.36 14.29 45.06 25.34 8.08 2.61 75 378.91 120.73 2.51 4.31 80 213.44 68.57 39.11 22.40 12.88 7.43 80 137.71 48.92 82.03 29.21 17.46 10.45 6.26 2.26 1.36 62.89 90 181.91 4.61 8.78 0.98 106.83 37.12 21.96 2.75 13.02 1.64 14.07 95 90 246.68 152.36 94.28 58.45 5.49 36.30 22.58 3.44 95 100 22.89 14.59 9.30 5.93 1.54 0.40 3.78 0.62 2.41 100 105 152.26 95.10 59.53 37.34 23.47 14.78 9.32 5.89 3.73 2.37 105 90.65 57.36 36.38 1.59 110 23.12 14.72 9.39 6.01 3.85 2.47 110 143.99 61.00 25.97 16.97 4.77 115 93.67 39.78 11.11 7.28 3.13 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.89 120 125 57.96 37.74 24.58 4.44 2.90 16.02 10.44 6.81 1.54 125 130 52.76 35.61 24.04 16.23 10.96 5.00 3.38 2.28 7.40 3.19 130 135 17.69 11.53 7.51 4.90 1.36 0.88 0.58 0.38 2.03 135 140 1.08 35.39 24.00 16.28 11.05 7.50 5.09 3.45 2.35 1.59 1.91 140 145 18.01 12.39 8.52 5.86 4.03 2.77 1.31 0.90 0.62 145 35.35 17.29 150 24.72 12.09 8.46 5.92 4.15 2.90 2.04 1.43 0.0 150 0.0 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.55 155 17.37 7.76 5.19 160 11.61 3.47 2.32 1.03 0.69 0.46 160 18.01 165 5.86 4.03 0.90 0.62 0.0 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.91 180 18.01 8.52 2.77 1.31 12.39 4.03 0.90 0.62 5.86 180 185 18.01 12.39 8.57 5.86 4.03 1.31 0.90 0.62 185 0.0 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 8.77 17.34 6.23 190 195 12.33 4.43 3.15 2.24 1.59 1.13 0.81 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 8.77 290 295 17.34 12.33 6.23 4.43 3.15 2.24 1.59 1.13 0.81 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 0.0 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 1805.53 662.81 243.31 89.32 32.79 4.42 1.62 0.60 0.22 12.04 335 950.49 155.39 340 384.30 62.84 25.41 10.28 4.16 1.68 0.68 0.28 340 345 437.88 217.23 187.32 80.15 14.68 34.30 6.29 2.69 1.15 0.49 0.21 19.67 345 350 97.47 3.95 1.77 8.80 0.80 0.36 0.16 1805.53 89.32 350 355 662.81 243.31 32.79 12.04 1.62 0.60 355 360 1158.97 481.67 200.87 84.08 35.33 14.91 0.50 6.37 2.69 1.15 FIRST HARMUNIC AMPLITUDE 34163.8914065.25 5910.92 2547.56 1132.39 251.39 125.70 66.87 36.83 522.31

(IN HOURS)
THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

1.71

1.61

1.89

1.75

24509.35 9739.16 3908.87 1588.30

2.13

1.94

2.42

2.16

PHASE

(IN HOURS) SECOND HARMONIC AMPLITUDE 24:

PHASE

2.78

656.04

2.45

3.19

277.45

2.80

3.65

121.60

3.23

4.15

56.20

3.74

4.64

27.86

4.31

5.12

14.93

4.88

PIC DU MIDI GEOGRAPHIC LATITUDE = 42.93 GEDGRAPHIC LONGITUDE = 0.25 ASY.LONG./BETA: +1.6 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 +1.4 +1.0 0 219.58 39.04 6.94 0.52 0.09 92.59 2.93 1.23 0.22 16.46 7.74 1.46 218.30 3.36 0.27 0.12 10 94.73 41.11 17.84 0.63 2.20 15 445.38 213.33 103.34 50.83 13.13 3.84 1.32 15 3277.77 20 1344.43 552.31 227.29 93.72 38.72 16.04 6.66 1.16 320.38 307.79 20 134.60 56.64 25 1823.90 763.81 23.87 10.08 4.26 1.81 0.77 1501.85 30 678.95 139.92 63.78 29.15 13.36 6.14 2.83 1.30 30 374.38 8.99 35 807.70 174.88 82.32 39.05 18.67 4.36 2.13 1.05 35 40 2036.64 870.99 376.12 164.15 72.46 32.37 14.64 6.70 3.11 1.46 40 299.92 174.74 45 1405.27 7.35 3.59 1.77 646.40 140.39 66.30 31.58 15.18 45 803.23 1031.70 1753.71 8.74 50 372.53 507.75 82.95 39.87 19.41 9.57 2.41 1.23 16.85 55 50 252.34 32.73 126.60 64.10 2.40 3.73 337.42 7.49 1.90 60 763.94 151.44 69.22 32.28 60 22.15 11.53 6.06 65 1411.00 686.90 84.60 51.59 3.22 168.14 43.05 70 783.99 198.39 393.15 7.27 3.85 2.06 100.80 26.62 70 75 45.06 25.34 463.34 257.70 143.71 14.29 8.08 4.59 2.61 80.36 75 378.91 120.73 39.11 80 213.44 68.57 12.88 7.43 4.31 2.51 22.40 95 137.71 48.92 17.46 3.76 80 82.03 10.45 6.26 1.36 29.21 2.26 90 181.91 62.89 7.74 2.75 85 37.12 21.96 4.61 106.83 13.02 1.64 90 95 94.28 14.07 8.78 246.68 152.36 58.45 36.30 22.58 5.49 3.44 95 100 5.93 22.89 14.59 9.30 3.78 2.41 1.54 0.98 0.62 0.40 152.26 100 105 95.10 59.53 37.34 23.47 14.78 9.32 5.89 3.73 2.37 105 110 90.65 57.36 36.38 14.72 9.39 6.01 3.85 2.47 1.59 23.12 110 115 143.99 93.67 61.00 39.78 25.97 16.97 11.11 7.28 4.77 3.13 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 57.96 24.58 120 125 37.74 16.02 10.44 6.81 4.44 2.90 1.89 1.24 24.04 7.51 16.28 8.52 17.29 52.76 125 130 5.00 2.28 35.61 16.23 10.96 7.40 3.38 1.54 130 135 0.38 11.53 4.90 3.19 7.50 2.08 1.36 0.88 2.35 135 140 35.39 3.45 1.59 5.09 1.08 24.00 11.05 145 0.90 140 18.01 1.31 12.39 4.03 2.77 5.86 0.62 145 150 35.35 24.72 4.15 2.90 1.43 12.09 8.46 5.92 2.04 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 17.37 3.47 155 7.76 5.19 1.55 160 11.61 2.32 1.03 0.69 0.46 160 165 18.01 8.52 1.91 0.90 12.39 5.86 4.03 2.77 1.31 0.62 0.0 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.31 175 180 18.01 12.39 8.52 5.86 4.03 2.77 1.91 0.90 0.62 180 185 18.01 12.39 8.52 5.86 4.03 2.77 1.91 1.31 0.90 0.62 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.59 190 195 17.34 12.33 8.77 0.81 6.23 4.43 3.15 2.24 1.13 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 17.34 12.33 3.15 2.24 1.59 1.13 0.81 6.23 4.43 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 155,39 335 340 950.49 384.30 0.28 10.28 1.68 0.68 67.84 25.41 4.16 340 345 437.88 80.15 6.29 7.69 14.68 0.49 0.21 34.30 1.15 97.47 345 350 217.23 43.73 1.77 0.16 19.62 8.80 3.95 0.80 0.36 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 1158.97 481.67 200.87 14.91 1.15 84.08 35.33 6.32 2.69 0.50 FIRST HARMONIC AMPLITUDE 19598.68 8806.47 224.99 64.25 4026.80 1880.03 899.59 442.84 118.22 36.05 3.69 PHASE 2.35 2.54 2.76 3.03 3.34 4.08 4.89 5.29 CIN HOURS SECOND HARMONIC AMPLITUDE 13754.51 5989.33 2632.71 1170.77 528.48 243.37 115.17 56.53 29.06 15.74 2.59 2.27 PHASE 4.57 2.42 2.80 1.06 3.36 3.77 4.12 5.04 (IN HOURS)

68

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

				PIC DI							
ASY.L	DNG.	GEDGRAPHI BETA: +1.6	+1.4	UDE = 41.2	+1.0	OGRAPHIC +0.8	+0.6	E =	+0.2	0.0	-0.2
-31.66		DE14110	****	****	****	***	+0.0	*0.4	+0.2	0.0	-0.2
0	5	219.58	92.59	39.04	16.46	6.94	2.93	1.23	0.52	0.22	0.09
10	10	218.30	213.33	103.34	17.84	7.74	3.36 13.13	6.97	3.84	2.20	1.32
15	20	647.64	282.55	123.57	54.17	23.81	10.49	4.63	2.05	0.91	0.41
20	25	873.42	379.51	164.98	71.76	31.23	13.59	5.92	2.58	1.13	0.49
25 30	30 35	1280.53	587.93	270.36	124.53	57.45	26.55	12.29	5.70	2.65	1.23
35	40	578.30	374.38	174.88	82.32 69.26	39.05	18.67	8.99	4.36	2.13	1.05
40	45	1183.95	555.38	262.49	124.99	59.97	28.98	14.10	6.91	3.41	1.69
45	50	581.91	281.52	137.31	67.55	33.54	16.80	8.50	4.34	2.23	1.16
50 55	55 60	1031.70	507.75 379.64	252.34 182.02	88.60	64.10 43.81	32.73	16.85	8.74 5.81	4.57 3.05	1.62
60	65	1411.00	686.90	337.97	168.14	84.60	43.05	22.15	11.53	6.06	3.22
65	70	783.99	393.15	198.39	100.80	51.59	26.62	13.85	7.27	3.85	2.06
70 75	75	463.34 378.91	257.70	143.71	80.36	45.06	25.34	14.29	7.43	4.59	2.51
80	85	137.71	82.03	48.92	68.57 29.21	17.46	10.45	6.26	3.76	2.26	1.36
85	90	181.91	106.83	62.89	37.12	21.96	13.02	7.74	4.61	2.75	1.64
90	95	246.68	152.36	94.28	58.45	36.30	22.58	14.07	8.78	5.49	3.44
100	100	22.89 152.26	14.59 95.10	9.30 59.53	5.93 37.34	3.78	2.41	9.32	0.98 5.89	0.62 3.73	2.37
105		90.65	57.36	36.38	23.12	14.72	9.39	6.01	3.85	2.47	1.59
110		143.99	93.67	61.00	39.78	25.97	16.97	11.11	7.28	4.77	3.13
115		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
-	125	57.96 52.76	37.74 35.61	24.58	16.02	10.44	6.81 7.40	5.00	2.90 3.38	2.28	1.24
130		17.69	11.53	7.51	4.90	3.19	2.08	1.36	0.88	0.58	0.38
135		35,39	24.00	16.28	11.05	7.50	5.09	3.45	2.35	1.59	1.08
140		18.01 35.35	12.39	8.52 17.29	5.86	4.03	2.77	1.91	2.90	0.90	0.62
	155	0.0	0.0	0.0	0.0	0.0	5.92	0.0	0.0	0.0	0.0
155	160	17.37	11.61	7.76	5.19	3.47	2.32	1.55	1.03	0.69	0.46
	165	18.01	12.39	8.52	5.86	4.03	2.77	1.91	1.31	0.90	0.62
	170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	180	18.01	12.39	8.52	5.86	4.03	2.77	1.91	1.31	0.90	0.62
	185	18.01	12.39	8.52	5.86	4.03	2.77	1.91	1.31	0.90	0.62
185		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190	200	0.0	12.33	8.77	0.0	0.0	3.15	2.24	0.0	0.0	0.81
200		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235	240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245	250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250	255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280 285		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290		17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
295	300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320	325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325 330		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340	345	437.88	187.32	80.15	34.30	14.68	6.29	2.69	1.15	0.49	0.21
345		217.23	97.47	43.73	19.62	8.80	3.95	1.77	0.80	0.36	0.16
350 355		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	HARM	208.48	97.37	45.48	21.24	9.92	4.63	2.16	1.01	0.47	0.22
AMPLI	TUDE	12060.53	5812.38	2845.56	1418.24	721.21	374.96	199.63	108.94	60.93	34.89
PHA		2.97	3.15	3.37	3.61	3.88	4.18	4.50	4.84	5.17	5.51
(IN H		RMONIC									
AMPLI			3957.81	1872.85	896.21	434.66	214.33	107.89	55.73	29.69	16.38
PHA	SE	2.88	3.02	3.19	3.39	3.62	3.88	4.17	4.50	4.86	5.24
	DURS	LIMIT FOR TH	116 (116)	HATTON	16 60 60	CV					
112 0		CIMIL PUR II	113 CALC	OLA TUN	15 80.00	GV					

PIC DU MIDI GEOGRAPHIC LATITUDE = 42.93 GEOGRAPHIC LONGITUDE = 0.25 ASY.LONG. BETA: +1.6 +1.0 +0.4 +0.2 0.0 -0.: +1.4 +0.8 +0.6 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 59.61 45.48 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 15 228.14 115.86 31.21 16.70 9.18 5.20 3.05 1.85 1.16 15 20 208.48 97.37 21.24 9.92 2.16 1.01 0.47 0.22 4.63 0.0 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 141.80 94.73 140.20 138.61 93.58 627.77 298.27 30 67.45 32.10 15.29 7.29 3.47 1.66 0.79 369.82 578.30 30 187.06 35 48.02 24.37 12.38 6.30 3.21 1.64 0.83 4.22 4.96 3.54 40 284.43 270.59 69.26 34.29 17.02 8.46 2.11 1.06 40 45 528.84 36.48 24.73 57.15 9.64 1.32 71.07 18.74 2.56 6.73 47.93 50 364.68 1.88 184.05 12.85 1.00 213.30 55 812.12 415.16 29.80 15.62 8.22 4.35 2.31 110.14 15.72 365.34 192.32 54.30 29.12 8.53 2.56 1.41 60 4.66 65 758.24 397.24 209.40 59.25 17.15 9.30 5.07 2.78 111.06 70 783.99 393.15 198.39 51.59 100.80 13.85 7.27 2.06 26.62 3.85 463.34 70 75 257.70 143.71 45.06 25.34 80.36 14.29 8.08 4.59 2.61 75 80 378.91 120.73 39.11 12.88 4.31 2.51 213.44 68.57 22.40 7.43 6.26 80 85 137.71 48.92 3.76 82.03 29.21 17.46 10.45 1.36 2.26 85 90 181.91 62.89 37.12 21.96 4.61 106.83 13.02 1.64 5.49 90 95 246.68 94.28 14.07 8.78 152.36 58.45 36.30 22.58 3.44 9.30 95 100 22.89 14.59 5.93 3.78 2.41 1.54 0.98 0.62 0.40 100 105 152.26 95.10 37.34 23.47 14.78 9.32 5.89 3.73 2.37 105 110 90.65 57.36 3.85 36.38 23.12 14.72 9.39 6.01 2.47 1.59 110 143.99 115 93.67 61.00 39.78 25.97 16.97 11.11 7.28 4.77 3.13 0.0 24.58 24.04 7.51 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 37.74 1.89 16.02 10.44 6.81 4.44 1.24 5.00 3.38 125 130 52.76 35.61 1.54 16.23 10.96 7.40 2.28 130 135 17.69 11.53 4.90 0.58 0.38 2.08 1.36 3.19 0.88 135 140 35.39 16.28 3.45 1.59 1.08 11.05 7.50 5.09 2.35 24.00 18.01 1.91 140 145 8.52 2.77 1.31 0.90 12.39 5.86 4.03 0.62 145 150 35.35 24.72 17.29 12.09 5.92 4.15 2.90 2.04 1.43 8.46 150 155 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 155 160 17.37 7.76 11.61 5.19 3.47 2.32 1.55 1.03 0.69 0.46 160 165 18.01 8.52 4.03 1.91 12.39 5.86 2.77 1.31 0.90 0.62 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 18.01 12.39 8.52 5.86 4.03 2.77 1.91 1.31 0.90 0.62 180 185 18.01 12.39 8.52 5.86 4.03 2.77 1.91 1.31 0.90 0.62 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.23 1.59 190 195 17.34 12.33 8.77 3.15 4.43 2.24 1.13 0.81 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 17.34 8.77 12.33 6.23 4.43 3.15 2.24 1.59 1.13 0.81 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 208.48 97.37 45.48 21 . 24 9.92 2.16 1.01 0.47 0.22 4.63 FIRST HARMONIC 6978.15 3644.42 3.78 3.94 97.76 AMPLITUDE 1925.37 1030-14 558.81 307.65 172.03 56.46 PHASE 4.12 4.32 4.53 4.77 5.01 4.27 5.53 (IN HOURS | SECOND HARMUNIC AMPLITUDE 50 5060.44 2571.67 1315.93 678.72 353.33 185.99 99.23 53.81 29.76 16.83 PHASE 3.63 3.75 1.90 4.94 4.06 4.74 4.45 4.68 5.22 THE UPPER LIMIT FOR THIS CALCULATION IS 50.00 GV

			PIC DU	MIDI						
		C LATITU	-			LONGITUDE		0.25		
ASY. LONG. / BETA	1= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
0 5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
5 10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 15 15 20	0.0	0.0	8.77	6.23	0.0	0.0	0.0	0.0	0.0	0.81
20 25	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 35	159.02	83.53	43.88	23.05	12.11	6.36	3.34	1.76	0.92	0.48
35 40 40 45	159.02 318.03	83.53	43.88	23.05	12.11	6.36	3.34 6.68	1.76	0.92	0.48
45 50	156.20	86.68	48.10	26.69	14.81	8.22	4.56	2.53	1.40	0.78
50 55	392.84	214.26	116.98	63.93	34.97	19.15	10.49	5.76	3.16	1.74
55 60 60 65	154.53	88.79	51.03	29.33	16.86	9.69	5.57	3.21	1.84	1.06
60 65 65 70	153.90	299.87 88.72	51.22	89.82 29.61	49.33	27.16	5.77	3.36	1.95	2.56
70 75	463.34	257.70	143.71	80.36	45.06	25.34	14.29	8.08	4.59	2.61
75 80	378.91	213.44	120.73	68.57	39.11	22.40	12.88	7.43	4.31	2.51
80 85 85 90	181.91	82.03	48.92	29.21	17.46	10.45	7.74	3.76 4.61	2.75	1.36
90 95	246.68	106.83	94.28	37.12 58.45	21.96	13.02	14.07	8.78	5.49	1.64
95 100	22.89	14.59	9.30	5.93	3.78	2.41	1.54	0.98	0.62	0.40
100 105	152.26	95.10	59.53	37.34	23.47	14.78	9.32	5.89	3.73	2.37
105 110	90.65	57.36 93.67	36.38	23.12	14.72	9.39	6.01	7.28	2.47	3.13
115 120	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
120 125	57.96	37.74	24.58	16.02	10.44	6.81	4.44	2.90	1.89	1.24
125 130	52.76	35.61	24.04	16.23	10.96	7.40	5.00	3.38	2.28	1.54
130 135 135 140	17.69 35.39	11.53	7.51	4.90	3.19	2.08	1.36	0.88	0.58	0.38
140 145	18.01	24.00 12.39	8.52	5.86	7.50	2.77	1.91	1.31	0.90	0.62
145 150	35.35	24.72	17.29	12.09	8.46	5.92	4.15	2.90	2.04	1.43
150 155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155 160	17.37	11.61	7.76	5.19	3.47	2.32	1.55	1.03	0.69	0.46
160 165 165 170	0.0	12.39	8.52	5.86	0.0	2.77	0.0	0.0	0.90	0.62
170 175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175 180	18.01	12.39	8.52	5.86	4.03	2.77	1.91	1.31	0.90	0.62
180 185	18.01	12.39	8,52	5.86	4.03	2.77	1.91	1.31	0.90	0.62
185 190 190 195	17.34	0.0	8.77	0.0	0.0	0.0	2.24	1.59	0.0	0.0
195 200	0.0	0.0	0.0	0.0	0.0	3.15	0.0	0.0	0.0	0.0
200 205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205 210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210 215 215 220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220 225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225 230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230 235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235 240 240 245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240 245 245 250	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250 255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255 260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260 265	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270 275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275 280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280 285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
2 85 290 290 295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295 300	0.0	12.33	8.77	0.0	0.0	3.15 0.0	0.0	0.0	0.0	0.81
300 305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305 310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315 315 320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325 330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330 335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335 340 340 345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350 355	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355 360	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
FIRST HARMONIC		2002 70	1104 45	400 00	300 03	***		93 14	40 30	20 0.
PHASE	4.79	2092.78	5.05	5.19	399.83 5.35	5.51	5,69	5.86	6.05	6.23
(IN HOURS)		• • • •	2.03			,,,,			0.00	
SECOND HARMUN										
AMPLITUDE	2738.89		842.40	470.38	264.11	149.27	85.03	48.88	28.40	16.71
IN HOURS	4.58	4.68	4.79	4.92	5.06	5.21	5,38	5.57	5.76	5.98
THE UPPER LIM	T FOR TH	IS CALCU	LATION I	5 29.00	GV					

ROME GEOGRAPHIC LATITUDE = 41.90 GEOGRAPHIC LONGITUDE = 12.52 ASY. LONG. / BETA = +1.2 +1.0 +0.8 +0.4 +0.2 0.0 -0.2 +1.6 +1.4 +0.6 4973.82 1685.20 577.64 1.26 200.51 70.56 25.19 9.13 3.36 0.48 790.84 127.94 3.35 12.78 15.08 0.54 790.84 318.08 9124.39 2927.08 10 51.46 20.70 8.32 1.35 0.22 10 15 105.43 313.64 36.24 4.64 0.67 14305.25 4490.15 18289.54 6035.79 14305.25 449.65 4.96 0.56 20 1416.67 46.32 1.66 28.59 20 25 10.35 1.47 2012.16 80.69 232.14 3.84 7.71 2.99 968.64 6890.26 2579.63 20.06 1.17 30 364.98 138.08 52.48 1229.87 504.46 2867.08 1015.95 1229.87 14.37 30 3000.19 34.94 5.91 207.04 2.43 35 85.03 1.00 9.37 8359.19 141.67 55.67 22.55 1.72 40 40 45 3797.35 1406.59 536.68 86.38 36.48 15.91 7.14 1.54 211.67 3.28 2640.53 27.99 0.97 50 1034.97 410.72 165.25 67.48 11.80 5.05 2.20 91.66 50 55 2635.06 1120.47 480.97 208.70 40.80 18.42 8.44 3.93 1.85 60 4339.92 1519.62 562.32 91.58 39.94 18.14 8.50 4.08 1.99 220.63 65 8045.89 2757.93 960.90 18.49 7.59 60 341.83 124.85 47.12 3.27 1.48 65 70 2138.49 971.74 448.72 24.09 12.06 210.69 100.60 48.83 6.12 4.03 70 75 1283.00 598.79 282.51 31.88 15.80 7.93 2.07 134.85 65.16 797.05 4.33 75 80 402.32 204.84 105.24 54.58 28.57 15.10 8.05 2.35 787.18 80 85 406.53 210.84 109.84 57.50 30.25 15.99 8.50 4.54 2.44 110.40 106.52 43.35 68.39 40.07 6.99 5.74 336.57 348.91 2.35 85 90 192.62 63.37 36.44 20.98 12.10 4.05 32.86 90 10.25 95 192.53 59.09 18.33 3.23 1.82 3.38 95 120.86 1.22 100 72.36 25.99 9.36 2.03 100 105 25.03 9.20 5.58 3.39 2.06 187.50 113.19 41.36 15.17 0.90 105 110 121.41 4.51 1.54 69.66 23.11 13.37 7.75 2.63 76.32 125.29 10.67 6.55 110 115 206.02 28.45 17.41 4.03 46.56 4.77 1.94 71.67 45.55 18.43 7.48 3.04 1.24 120 120 125 91.01 34.08 20.92 4.90 1.88 55.64 12.87 7.93 3.03 1.17 125 130 101.88 64.55 40.91 25.94 16.45 10.44 6.62 4.21 2.67 1.70 130 135 93.61 59.30 37.67 23.99 15.31 9.80 6.29 4.04 2.61 1.68 135 140 18.04 7.66 1.38 0.90 0.59 0.38 11.76 5.00 3.26 2.12 140 145 95.80 38.77 6.39 4.08 60.93 24.68 15.72 10.02 2.60 1.66 2.95 145 150 33.06 22.09 9.87 6.60 1.97 1.32 0.88 4.41 150 155 44.57 19.47 29.44 12.90 8.56 5.69 2.52 1.68 1.12 0.90 155 160 1.38 18.04 11.76 7.66 5.00 3.26 2.12 0.59 0.38 160 165 1.47 0.98 7.38 16,53 11.05 4.93 3.30 2.20 0.66 0.44 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15.05 6.55 170 175 34.57 2.86 1.47 2.16 1.89 0.82 4.33 22.81 9.93 1.25 175 180 11.05 4.93 2.20 0.66 0.44 4.57 180 185 20.45 9.67 1.02 0.70 1.49 14.06 6.65 3.15 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 7.87 190 195 36.97 17.05 5.35 3.64 2.47 1.68 25.11 11.58 1.14 195 200 20.45 14.06 9.67 3.15 2.16 1.49 1.02 0.70 6.65 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 36.97 7.87 2.47 1.68 25.11 17.05 11.58 5.35 3.64 1.14 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2930.80 0.57 1.96 1.76 335 340 863.66 254.51 75.00 22.10 6.51 1.92 0.17 0.05 5496.14 1761.58 1958.23 718.86 1263.55 514.96 6.06 340 345 565.25 263.89 181.58 58.40 18.80 0.63 0.20 345 350 96.87 35.56 13.05 0.65 0.24 1263.55 514.96 209.95 11595.00 3591.86 1118.94 0.97 350 355 5.82 2.38 34.93 85.62 14.26 0.40 355 360 11.48 0.43 350.96 111.01 35.48 1.26 FIRST HARMONIC 34.97 AMPLITUDE 105684.4736287.1412793.00 4660.38 1768.70 66.97 706.41 300.16 136.80 1.19 2.99 0.80 0.97 PHASE 1.49 2.39 1.89 3.66 4.34 (IN HOURS) SECOND HARMONIC AMPLITUDE 79053.1426357.18 8914.14 3064.38 1074.51 145.37 387.07 25.92 58.42 12.85 0.70 0.82 0.98 2.37 2.92 1.20 1.48 1.85 3.60 (IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

GEOGRAPHIC LATITUDE = 41.90 GEDGRAPHIC LONGITUDE = 12.52 ASY.LUNG./BETA= +1.6 +1.2 +0.4 +1.4 +1.0 +0.8 +0.6 +0.2 0.0 -0.2 2187.92 821.92 310.13 117.62 17.23 2.60 1.02 790.84 318.08 127.94 51.46 20.70 8.32 3.35 1.35 0.54 0.22 10 697.45 301.84 131.03 57.06 24.93 10.93 4.81 2.12 0.94 0.42 1.58 20 237.26 44.68 102.96 19.39 8.41 3.65 0.69 0.30 0.13 20 25 4366.45 1648.97 627.16 240.59 93.25 36.58 5.88 2.41 1.01 25 30 6890.26 2579.63 968.64 364.98 138.08 52.48 20.06 7.71 2.99 1.17 30 504.46 2.43 35 3000.19 1229.87 207.04 85.03 34.94 14.37 5.91 1.00 35 40 2642.49 1140.14 214.88 93.88 41.20 18.16 8.04 1.60 40 1087.11 2640.53 238.94 5.95 25.64 2.89 1.41 45 508.29 112.94 53.67 12.32 50 5.05 1034.97 165.25 67.48 11.80 2.20 3.93 50 55 2635.06 480.97 1120.47 8.44 1.85 208.70 91.66 40.80 18.42 55 1409.12 60 655.96 307.81 1.94 16.22 145.63 69.48 33.43 60 2549.75 996.35 65 395.66 12.43 5.64 1.27 160.25 66.45 28.32 2.64 65 70 2138.49 448.72 24.09 971.74 210.69 48.83 12.06 6.12 3.15 100.60 70 75 1283.00 65.16 15.80 7.93 598.79 282.51 134.85 31.88 4.03 2.07 8.05 75 80 797.05 204.84 15.10 402.32 105.24 54.58 28.57 4.33 2.35 80 85 787.18 406.53 210.84 109.84 57.50 30.25 15.99 8.50 4.54 85 90 336.57 192.62 110.40 63.37 36.44 20.98 12.10 6.99 4.05 2.35 90 95 348.91 192.53 106.52 59.09 18.33 10.25 5.74 3.23 1.82 32.86 95 72.36 100 120.86 43.35 25.99 15.59 9.36 5.62 3.38 2.03 1.22 100 2.06 105 187.50 113.19 68.39 41.36 25.03 15.17 9.20 5.58 3.39 105 23.11 1.54 110 121.41 69.66 40.07 13.37 7.75 4.51 2.63 0.90 110 10.67 115 206.02 125.29 76.32 46.56 28.45 17.41 6.55 4.03 2.48 115 120 45.55 28.97 3.04 1.24 71.67 18.43 11.74 7.48 1.94 91.01 34.08 120 7.93 4.90 1.88 125 55.64 20.92 12.87 3.03 1.17 125 40.91 6.62 1.70 93.61 9.80 130 64.55 25.94 16.45 4.21 2.67 135 4.04 130 6.29 59.30 23.99 15.31 2.61 1.68 0.59 135 1.38 0.90 18.04 7.66 0.38 140 11.76 5.00 3.26 15.72 2.12 38.77 4.08 140 145 95.80 60.93 6.39 2.60 24.68 10.02 1.66 2.95 1.97 145 150 33.06 22.09 14.77 9.87 6.60 4.41 1.32 0.88 150 155 19.47 3.78 2.52 44.57 29.44 12.90 5.69 1.68 1.12 8.56 155 160 18.04 11.76 7.66 5.00 2.12 1.38 0.90 0.59 0.38 3.26 160 165 16.53 11.05 7.38 4.93 3.30 2.20 1.47 0.98 0.66 165 0.0 0.0 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 170 175 34.57 15.05 9.93 6.55 4.33 2.86 1.89 1.25 0.82 22.81 175 180 16.53 11.05 7.38 4.93 3.30 1.47 0.98 0.66 0.44 2.20 4.57 180 185 20.45 14.06 9.67 6.65 3.15 2.16 1.49 1.02 0.70 185 1,90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5.35 1.14 190 195 36.97 25.11 17.05 11.58 7.87 3.64 2.47 1.68 4.57 195 200 20.45 14.06 9.67 6.65 2.16 1.49 1.02 0.70 3.15 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 0.0 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 0.0 0.0 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 0.0 0.0 0.0 0.0 0.0 240 0.0 0.0 0.0 0.0 0.0 240 0.0 0.0 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 36.97 2.47 11.58 5.35 3.64 1.68 1.14 25.11 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 0.0 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 0.0 0.0 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.79 345 350 1958.23 263.89 1.76 718.86 96.87 35.56 13.05 0.65 0.24 0.40 350 355 1263.55 514.96 209.95 85.62 34.93 14.26 5.82 2.38 0.97 355 360 237.26 102.96 44.68 19.39 8.41 3.65 1.58 0.69 0.30 0.13 FIRST HARMONIC 36702.8215045.22 1.70 1.88 334.72 AMPLITUDE 6283.39 1178.46 252.13 124.08 63.84 34.28 PHASE 2.12 4.15 2.40 3.64 4.69 (IN HOURS) SECOND HARMONIC 26525.7710526.42 4217.22 1709.08 127.37 57.29 13.75 294.95 702.89 27.20 PHASE 1.59 1.89 1.72 3.04 2.10 2.35 2.66 3.48 3.98 4.50

ROME

(IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

GEOGRAPHIC LATITUDE = 41.90 GEOGRAPHIC LONGITUDE = ASY.LONG./BETA= +1.6 +0.2 +1.4 +1.2 +1.0 +0.4 0.0 -0.2 +0.8 +0.6 229.69 46.24 127.94 131.03 0.84 103.05 20.75 9.31 4.18 1.87 0.38 0.17 790.84 697.45 237.26 51.46 10 0.54 318.08 20.70 8.32 3.35 1.35 0.22 4.81 10 2.12 301.84 24.93 10.93 0.42 44.68 20 19.39 8.41 0.69 0.30 102.96 3.65 0.13 4.97 25 449.99 2.36 211.25 0.54 46.84 22.12 1.12 176.96 504.46 493.93 74.35 2.44 1015.57 30 423.04 5.68 1.05 13.32 31.39 0.46 85.03 3000.19 1229.87 34.94 14.37 2.43 1.00 2642.49 1140.14 8.04 3.58 40 214.88 93.88 41.20 18.16 1.60 1087.11 238.94 5.95 45 508.29 112.94 53.67 25.64 12.32 2.89 1.41 45 50 682.30 146.83 7.01 3.29 0.73 316.11 68.38 31.92 14.94 1.55 480.97 18.42 50 55 2635.06 1120.47 208.70 91.66 40.80 8.44 55 60 1409.12 655.96 145.63 69.48 33.43 16.22 3.91 1.94 131.76 448.72 282.51 60 65 591.52 277.49 63.38 30.89 15.26 7.64 3.88 1.99 1.03 65 70 2138.49 971.74 210.69 100.60 48.83 24.09 12.06 6.12 3.15 70 7.93 75 1283.00 598.79 134.85 65.16 31.88 15.80 4.03 2.07 797.05 204.84 8.05 80 402.32 105.24 54.58 28.57 15.10 4.33 2.35 787.18 336.57 8.50 57.50 15.99 4.54 80 85 406.53 210.84 109.84 30.25 2.44 6.99 5.74 3.38 110.40 106.52 43.35 4.05 85 90 20.98 12.10 2.35 192.62 63.37 36.44 348.91 120.86 187.50 90 95 18.33 10.25 192.53 59.09 32.86 3.23 1.82 2.03 100 25.99 15.59 72.36 9.36 1.22 68.39 9.20 5.58 100 3.39 105 113.19 41.36 25.03 15.17 2.06 2.63 0.90 110 121.41 69.66 23.11 4.51 6.55 110 206.02 125.29 76.32 10.67 4.03 2.48 115 28.45 17.41 46.56 4.77 28.97 11.74 120 71.67 45.55 18.43 7.48 3.04 1.94 1.24 91.01 34.08 4.90 120 125 55.64 20.92 12.87 7.93 3.03 1.88 1.17 1.70 125 130 101.88 64.55 40.91 25.94 16.45 10.44 6.62 4.21 2.67 130 135 93.61 59.30 37.67 23.99 15.31 9.80 6.29 4.04 2.61 1.68 135 140 18.04 7.66 1.38 0.90 0.59 11.76 5.00 3.26 0.38 2.12 140 145 95.80 60.93 24.68 15.72 10.02 6.39 4.08 2.60 1.66 14.77 145 150 33.06 22.09 9.87 2.95 1.97 1.32 0.88 6.60 4.41 3.78 150 155 44.57 29.44 19.47 12.90 5.69 2.52 1.68 8.56 1.12 155 160 18.04 11.76 7.66 5.00 2.12 1.38 0.90 0.59 0.38 3.26 0.98 4.93 160 165 16.53 11.05 7.38 3.30 2.20 1.47 0.66 0.44 0.0 15.05 7.38 165 170 170 175 9.93 34.57 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.33 1.25 22.81 6.55 2.86 0.82 0.98 175 180 16.53 2.16 0.44 11.05 4.93 3.30 2.20 0.66 180 185 20.45 9.67 0.70 14.06 6.65 4.57 3.15 1.02 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 36.97 17.05 190 195 25.11 5.35 3.64 2.47 1.68 11.58 7.87 1.14 1.49 20.45 195 200 14.06 9.67 4.57 3.15 2.16 1.02 0.70 6.65 200 0.0 0.0 0.0 0.0 205 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 36.97 25.11 17.05 11.58 7.87 5.35 3.64 2.47 1.68 1.14 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 265 270 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 320 325 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 0.0 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 209.95 0.97 350 355 1263.55 514.96 5.82 2.38 85.62 34.93 14.26 0.40 355 360 237.26 102.96 44.68 19.39 1.58 0.69 0.30 8.41 0.13 3.65 FIRST HARMONIC 20892.82 114.97 AMPLITUDE 9336.41 4237.53 1959.03 223.55 61.08 925.52 33.50 448.42 PHASE 2.36 2.55 4.98 5.43 3.34 3.70 4.53 3.03 (IN HOURS) SECOND HARMONIC 14802.23 6420.28 2808.11 1240.74 AMPLITUDE 555.24 117.45 56.18 27.84 252.61 14.38 PHASE 2.25 2.38 2.54 2.73 2.96 3.22 3.54 3.89 4.29

ROME

(IN HOURS)

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

ROME GEOGRAPHIC LATITUDE = 41.90 GEOGRAPHIC LONGITUDE = 12.52 +0.4 ASY.LONG./BETA= +1.6 +1.4 +1.2 +1.0 +0.8 +0.6 +0.2 0.0 -0.2 229.69 46.24 103.05 20.75 1.87 9.31 4.18 0.84 0.38 0.17 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 15 461.62 8.15 10 204.85 40.66 18-18 3.66 1.65 0.34 237.26 1.58 20 102.96 44.68 19.39 8.41 0.69 0.30 3.65 0.13 10.47 20 449.99 211.25 99.37 22.12 4.97 2.36 0.54 46.84 1.12 25 30 224.73 104.96 49.02 22.89 10.69 4.99 2.33 1.09 0.51 0.24 30 35 711.05 302.74 128.92 9.97 0.77 54.91 23.39 4.25 1.81 0.33 35 40 1615.83 725.07 326.11 147.02 13.67 2.84 66.44 30.10 6.23 1.30 40 45 1087.11 508.29 238.94 112.94 53.67 12.32 5.95 2.89 25.64 45 31.92 3.29 50 682.30 316.11 146.83 68.38 14.94 7.01 1.55 0.73 817.57 50 55 387.32 185.21 89.39 43.52 21.37 10.58 5.28 2.65 1.34 55 15.08 267.92 60 558.97 129.23 62.73 7.46 3.72 1.87 30.65 591.52 131.76 60 65 277.49 63.38 30.89 15.26 3.88 1.99 1.03 280.90 65 70 1111.83 556.67 142.82 73.15 37.74 19.60 10.24 5.39 2.85 70 12**83.0**0 797.05 282.51 75 7.93 598.79 134.85 65.16 31.88 15.80 4.03 2.07 75 80 402.32 204.84 105.24 54.58 28.57 15.10 8.05 4.33 2.35 80 787.18 210.84 4.54 85 109.84 57.50 15.99 30.25 8.50 2.44 192.62 6.99 85 90 336.57 110.40 63.37 4.05 36.44 20.98 12.10 2.35 348.91 95 192.53 106.52 5.74 32.86 18.33 10.25 3.23 1.82 95 100 120.86 72.36 43.35 3.38 25.99 15.59 5.62 2.03 1.22 9.36 3.39 100 105 187.50 113.19 68.39 9.20 41.36 25.03 5.58 15.17 2.06 105 110 121.41 69.66 40.07 13.37 4.51 1.54 0.90 23.11 7.75 2.63 110 115 206.02 125.29 76.32 10.67 6.55 4.03 2.48 46.56 28.45 17.41 115 28.97 120 71.67 45.55 18.43 11.74 4.77 3.04 1.94 1.24 7.48 91.01 120 34.08 4.90 125 55.64 20.92 12.87 7.93 3.03 1.88 1.17 1.70 125 130 101.88 40.91 64.55 25.94 16.45 10.44 6.62 4.21 2.67 6.29 130 135 93.61 59.30 37.67 23.99 15.31 9.80 4.04 2.61 1.68 7.66 38.77 135 140 18.04 11.76 5.00 3.26 2.12 1.38 0.90 0.59 0.38 4.08 140 145 95.80 60.93 24.68 15.72 10.02 6.39 2.60 1.66 14.77 145 150 33.06 22.09 9.87 6.60 4.41 2.95 1.97 1.32 0.88 150 155 44.57 29.44 19.47 12.90 5.69 3.78 2.52 1.68 1.12 8.56 155 160 2.12 18.04 11.76 7.66 5.00 1.38 0.90 0.59 0.38 3.26 160 165 16.53 11.05 7.38 4.93 3.30 2.20 1.47 0.98 0.66 0.44 165 170 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 15.05 170 175 34.57 9.93 6.55 1.25 22.81 4.33 2.86 1.89 0.82 175 4.93 1.47 0.98 180 16.53 11.05 7.38 3.30 0.44 2.20 0.66 180 185 20.45 1.49 14.06 9.67 6.65 4.57 3.15 1.02 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 36.97 17.05 2.47 25.11 7.87 5.35 3.64 1.14 11.58 1.68 1.49 195 200 20.45 9.67 4.57 2.16 1.02 0.70 14.06 6.65 3.15 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 36.97 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 25.11 11.58 7.87 5.35 3.64 2.47 1.68 1.14 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 0.0 0.0 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 0.0 0.0 0.0 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 0.0 0.0 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 236.89 99.89 355 42.12 17.76 7.49 1.33 3.16 0.56 0.24 0.10 1.58 355 360 237.26 102.96 44.68 19.39 8.41 3.65 0.69 0.30 0.13 FIRST HARMONIC AMPLITUDE 12697.71 6079.63 2951.90 104.99 1456.17 731.26 374.57 196.05 57.56 32.30 2.97 3.10 3.38 3.91 4.93 5.68 3.63 4.5 4.23 5.30 IN HOURS SECOND HARMUNIC 8843.07 4118.75 1934.82 AMPLITUDE 917.94 440.61 214.46 106.15 53.61 27.72 14.72 PHASE 2.97 2.83 3,13 3.31 3.51 3.75 4.01 4.31 4.97 4.63 (IN HOURS

80.00 GV

THE UPPER LIMIT FOR THIS CALCULATION IS

			ROME							
ASY.LONG./	GEDGRAPHI BETA= +1.6	+1.4	IDE = 4 +1.2	+1.0	DGRAPHIC +0.8	+0.6	DE = 12 +0.4	+0.2	0.0	-0.2
				.0	**	+0.0			0.0	-0.2
5 10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
10 15	224.73	104.96	49.02	22.89	0.0	0.0	2.33	1.09	0.0	0.0
15 20	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
20 25 25 30	220.30	108.19	53.14	26.10	12.82	6.29	3.09	1.52	0.75	0.37
30 35	0.0	0.0	49.02	0.0	0.0	0.0	2.33 0.0	0.0	0.51	0.24
35 40	445.03	213.15	102.16	48.99	23.51	11.29	5.42	2.61	1.25	0.60
40 45	620.52 445.03	305.34	150.58	74.43	36.87	18.31	9.11	4.54	2.27	1.14
45 50 50 55	350.98	213.15	96.85	48.99 50.88	23.51	11.29	5.42 7.37	3.87	2.04	1.07
55 60	706.34	352.96	177.01	89.10	45.01	22.82	11.62	5.94	3.04	1.57
60 65	354.62	177.59	89.64	45.61	23.40	12.10	6.31	3.32	1.75	0.93
65 70 70 75	874.57	453.71	236.22	123.44	30.64	34.09 16.72	9.14	9.56	2.74	1.50
75 80	797.05	402.32	204.84	105.24	54.58	28.57	15.10	8.05	4.33	2.35
80 85	787.18	406.53	210.84	109.84	57.50	30.25	15.99	8.50	4.54	2.44
85 90 90 95	336.57 348.91	192.62	110.40	63.37 59.09	36.44	20.98	12.10	6.99	4.05	2.35
95 100	120.86	192.53 72.36	43.35	25.99	32.86 15.59	18.33	10.25	3.38	2.03	1.82
100 105	187.50	113.19	68.39	41.36	25.03	15.17	9.20	5.58	3.39	2.06
105 110	121.41	69.66	40.07	23.11	13.37	7.75	4.51	2.63	1.54	0.90
110 115	206.02 71.67	125.29 45.55	76.32	46.56	28.45	17.41	10.67	6.55 3.04	1.94	1.24
120 125	91.01	55.64	34.08	20.92	12.87	7.93	4.90	3.03	1.88	1.17
125 130	101.88	64.55	40.91	25.94	16.45	10.44	6.62	4.21	2.67	1.70
130 135 135 140	93.61	59.30	7.66	5.00	15.31	9.80	1.38	0.90	2.61	0.38
140 145	95.80	60.93	38.77	24.68	15.72	10.02	6.39	4.08	2.60	1.66
145 150	33.06	22.09	14.77	9.87	6.60	4.41	2.95	1.97	1.32	0.88
150 155	44.57	29.44	19.47	12.90	8.56	5.69	3.78	2.52	1.68	1.12
160 165	18.04	11.76	7.66	5.00 4.93	3.26	2.12	1.38	0.90	0.59	0.38
165 170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170 175	34.57	22.81	15.05	9.93	6.55	4.33	2.86	1.89	1.25	0.82
175 180 180 185	16.53	11.05	7.38	6.65	3.30 4.57	2.20 3.15	2.16	0.98	1.02	0.44
185 190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190 195	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
195 200 205	20.45	0.0	9.67	0.0	0.0	3.15	0.0	0.0	1.02	0.70
205 210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210 215	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
215 220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220 225 230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230 235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235 240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240 245	36.97	0.0 25.11	0.0	11.58	7.87	0.0 5.35	3.64	2.47	1.68	1.14
250 255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255 260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260 265 270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270 275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275 280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280 285 290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290 295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295 300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305 310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315 320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325 330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335 340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
540 345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355 F60	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
TERST HARM	gh1C									
1007,171,05	7242.17			1042.23	558.74	303.48	167.16	93.44	53.03	30.57
10.00.01	3,83	4.00	4.14	4.40	4.63	4.88	5.15	5.43	5.72	6.02
185,780 HAR										
100 17 40	9114.45						94.84	50.45	27.21	14.91
19815	540	3.73	3.07	4.02	4.19	4.37	4.58	4.80	5.04	5.31
	DATE FOR TH	IS CALCU	LATION 1	5 50.00	GV					

	0.000.00.00		ROME							
ASV LONG /B	GEDGRAPHI					LONGITUD			0.0	• • •
ASY.LONG./B	ETA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
0 5	0.0	0.0	0.0	0.0	0 0	0.0	0.0	0.0	0 0	0 0
5 10	0.0		0.0	0.0	0.0	0.0		0.0	0.0	0.0
10 15	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
15 20	0.0	0.0	0.0	0.0	0.0		0.0		0.0	
				0.0	0.0	0.0		0.0	0.0	0.0
	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25 30	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
30 35	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
35 40	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
40 45	175.49	92.19	48.43	25.44	13.36	7.02	3.69	1.94	1.02	0.53
45 50	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
50 55	350.98	184.37	96.85	50.88	26.73	14.04	7.37	3.87	2.04	1.07
55 60	261.31	139.81	74.85	40.10	21.50	11.54	6.19	3.33	1.79	0.96
60 65	129.89	72.63	40.62	22.72	12.71	7.11	3.98	2.23	1.25	0.70
65 70	433.96	237.32	129.95	71.25	39.11	21.50	11.83	6.52	3.60	1.99
70 75	349.45	189.83		56.21	30.64	16.72	9.14	5.00	2.74	1.50
75 80	347.59	192.40	106.80	59.46	33.19	18.58	10.43	5.87	3.32	1.88
80 85	346.58	190.14	104.57	57.65	31.86	17.66	9.81	5.47	3.05	1.71
85 90	336.57	192.62	110.40	63.37	36.44	20.98	12.10	6.99	4.05	2.35
90 95	348.91	192.53	106.52	59.09	32.86	18.33	10.25	5.74	3.23	1.82
95 100	120.86	72.36	43.35	25.99	15.59	9.36	5.62	3.38	2.03	1.22
100 105	187.50	113.19	68.39	41.36	25.03	15.17	9.20	5.58	3.39	2.06
105 110	121.41	69.66	40.07	23.11	13.37	7.75	4.51	2.63	1.54	0.90
110 115			76.32					6.55		
115 120	71.67	125.29 45.55	28.97	46.56	28.45	17.41	4.77	3.04	1.94	1.24
				18.43	11.74					
120 125	91.01	55.64	34.08	20.92	12.87	7.93	4.90	3.03	1.88	1.17
125 130	101.88	64.55	40.91	25.94	16.45	10.44	6.62	4.21	2.67	1.70
130 135	93.61	59.30	37.67	23.99	15.31	9.80	6.29	4.04	2.61	1.68
135 140	18.04	11.76	7.66	5.00	3.26	2.12	1.38	0.90	0.59	0.38
140 145	95.80	60.93	38.77	24.68	15.72	10.02	6.39	4.08	2.60	1.66
145 150	33.06	22.09	14.77	9.87	6.60	4.41	2.95	1.97	1.32	0.88
150 155	44.57	29.44	19.47	12.90	8.56	5.69	3.78	2.52	1.68	1.12
155 160	18.04	11.76	7.66	5.00	3.26	2.12	1.38	0.90	0.59	0.38
160 165	16.53	11.05	7.38	4.93	3.30	2.20	1.47	0.98	0.66	0.44
165 170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170 175	34.57	22.81	15.05	9.93	6.55	4.33	2.86	1.89	1.25	0.82
175 180	16.53	11.05	7.38	4.93	3.30	2.20	1.47	0.98	0.66	0.44
180 185	20.45	14.06	9.67	6.65	4.57	3.15	2.16	1.49	1.02	0.70
185 190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190 195	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
195 200	20.45	14.06	9.67	6.65	4.57	3.15	2.16	1.49	1.02	0.70
200 205	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
205 210	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
210 215	0.0	0.0	0.0				0.0	0.0	0.0	0.0
				0.0	0.0	0.0				
215 220	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
220 225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
225 230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230 235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235 240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240 245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245 250	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
250 255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
255 260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260 265	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265 270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270 275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275 280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280 285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285 290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290 295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295 300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300 305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305 310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315 320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325 330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330 335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335 340	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340 345	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
345 350	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
350 355	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
355 360	0.0	0.0	0.0				0.0			
FIRST HARMO		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		2144 21	1214 62		304 34		122.00	77.00		
AMPLITUDE		2146.21		691.41	396.26	228.72	133.03	77.99	46.11	27.50
PHASE	4.95	5.09	5.23	5.39	5.56	5.74	5.93	6.13	6.35	6.56
(IN HOURS										
SECOND HARM										
AMPLITUDE	2754.88		831.94	459.43	254.71	141.84	79.40	44.71	25.36	14.50
PHASE	4.62	4.72	4.82	4.93	5.05	5.19	5.33	5.49	5.66	5.85
(IN HOURS)										
THE UPPER L	IMIT FOR TH	ITS CALCE	JEATION I	5 29.00	GV					

GEDGRAPHIC LATITUDE = 52.06 GEOGRAPHIC LONGITUDE . 5.07 ASY. LONG. / BETA= +1.2 +1.0 +1.6 +0.4 +0.2 0.0 -0.2 +1.4 +0.8 +0.6 2554.51 1.12 813.96 261.67 85.06 28.04 9.40 3.21 0.40 0.15 7508.15 2396.99 775.42 85.97 3.99 10 255.27 10.69 1.56 0.63 29.80 10 7315.58 2305.64 731.83 234.36 24.92 2.84 15 1877.84 27.95 20 16221.24 5496.38 647.04 224.92 78.90 10.00 3.62 1.33 20 796.51 351.78 20.60 51.12 5052.71 2002.74 317.85 127.26 8.33 3.38 1.38 25 6.39 2.92 30 1825.40 798.89 155.87 31.18 14.07 1.34 69.49 3.51 30 35 1266.60 592.00 278.71 132.17 30.36 14.70 7.17 1.73 63.13 1.96 35 40 7584.11 2431.91 792.12 263.58 90.27 32.10 11.96 4.70 0.86 411.74 40 45 2411.54 983.91 177.22 78.58 35.90 16.88 8.15 4.02 2.03 45 50 1480.14 645.41 286.04 129.20 59.62 28.17 13.64 6.77 3.44 1.78 55 1316.70 655.36 3599.97 1354.68 13.02 50 330.36 168.70 87.27 45.73 24.26 7.06 3.87 55 60 566.30 262.85 133.09 71.77 40.34 23.30 13.69 8.15 1294.93 60 65 70 8930.55 3324.41 533.88 235.13 111.02 56.00 23.73 29.90 16.69 9.64 65 1331.58 644.00 277.94 159.96 13.24 7.58 4.45 82.53 43.67 2.92 592.19 9.24 133.23 147.13 27.97 70 75 65.45 73.99 33.06 17.20 5.12 615.49 6.39 75 80 298.59 3.79 2.32 38.16 20.30 11.18 2.97 80 85 59.26 40.70 19.22 9.09 4.31 2.04 13.22 6.26 90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 90 95 37.19 26.45 18.81 13.37 9.51 4.81 3.42 2.43 1.73 6.76 10.38 95 100 21.30 7.25 5.06 3.54 2.47 1.73 1.21 0.85 14.86 2.38 100 15.87 4.47 1.73 105 21.80 8.41 6.13 3.26 9.25 1.52 105 110 12.50 6.85 5.07 3.75 2.78 2.06 0.83 1.13 5.86 110 115 28.05 20.49 14.98 10.95 8.01 4.29 3.14 2.30 1.68 2.77 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.69 120 125 8.78 2.07 15.69 11.74 6.58 4.92 1.56 1.17 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.93 0.55 135 140 1.50 0.71 3.19 0.33 2.48 1.17 0.91 0.43 0.0 0.0 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.87 4.97 145 150 6.38 3.01 1.82 1.42 1.10 0.67 2.34 0.86 150 155 0.55 3.19 2.48 1.50 0.33 1.17 0.91 0.43 0.0 0.0 155 0.0 0.0 0.0 0.0 160 0.0 0.0 0.0 0.0 160 165 6.38 4.97 3.01 2.34 1.82 1.42 1.10 0.67 0.86 165 170 1.93 0.71 0.55 3.19 2.48 1.50 1.17 0.91 0.43 0.33 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.93 230 235 3.19 2.48 1.50 0.91 0.71 0.55 0.43 0.33 1.17 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 0.0 0.0 0.0 0.0 0.0 245 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2476.77 729.87 7185.40 2188.95 3945.25 1366.64 0.0 215.08 667.21 474.62 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 5.50 1.62 0.48 0.04 325 63.38 0.14 18.68 203.49 5.79 325 1.77 330 62.09 18.96 0.54 0.17 7.09 2.49 0.31 330 335 20.19 0.88 72.36 1067.81 29.52 4.97 2.01 335 340 435.19 177.42 0.34 12.05 0.82 340 345 2490.89 289.37 34.75 1.59 0.59 846.14 12.25 4.38 0.22 345 350 7315.58 2305.64 731,83 75.89 24.92 8.33 2.84 0.99 234.36 0.36 1844.78 696.20 264.44 101.21 39.09 15.25 6.02 2.41 0.98 0.40 355 360 3344.38 1080.63 356.90 120.73 41.87 14.88 2.01 0.76 0.29 FIRST HARMONIC 86819.4830222.3610892.45 320.32 158.39 83.79 46.93 AMPLITUDE 4105.25 1636.61 697.72 2.58 PHASE 0.69 0.86 1.08 1.72 3.03 3.84 2.13 3.45 IN HOURS SECOND HARMONIC AMPLITUDE 56048.8119151.06 6755.19 2497.15 104.25 987.81 426.62 202.44 57.02 32.52 PHASE 0.65 0.84 2.67 1.08 1.40 1.79 2.23 3.07 3.41 (IN HOURS

UTRECHT

THE UPPER LIMIT FOR THIS CALCULATION IS 500.00 GV

GEUGRAPHIC LATITUDE = 52.06 GEDGRAPHIC LONGITUDE = 5.07 ASY.LONG. / BETA = +1.6 +1.4 +1.0 +0.4 +0.2 +0.8 +0.6 0.0 -0.2 0 200.20 35.60 84.42 15.01 6.33 2.67 0.20 0.08 386.68 178.44 82.66 17.94 3.95 1.86 10 38.44 8.40 0.88 0.42 194.11 7.87 10 87.09 39.07 17.53 3.53 1.58 0.71 0.32 0.14 15 20 6809.39 2518.69 933.47 346.82 129.25 48.35 18.17 6.87 1.00 2.61 796.51 351.78 278.71 20 127.26 51.12 5052.71 2002.74 317.85 20.60 8.33 3.38 1.38 30 1825.40 798.89 155.87 69.49 31.18 14.07 6.39 2.92 1.34 1.73 30 35 1266.60 592.00 132.17 63.13 30.36 14.70 7.17 3.51 99.36 40 462.63 213.36 46.75 22.24 10.71 5.21 2.57 1.28 0.65 2411.54 411.74 40 45 983.91 177.22 78.58 16.88 8.15 35.90 4.02 2.03 1.78 50 286.04 129.20 59.62 28.17 1480.14 645.41 13.64 3.44 13.02 50 55 1316.70 655.36 330.36 87.27 7.06 3.87 168.70 45.73 24.26 199.46 60 1123.20 624.81 351.22 38.72 22.82 13.55 8.10 114.42 66.26 65 4285.85 1835.73 817.25 380.43 185.78 95.13 50.88 28.25 9.47 16.16 70 317.51 159.96 23.73 4.45 1331.58 644.00 82.53 43.67 13.24 7.58 592.19 2.92 70 75 277.94 133.23 9.24 1.71 65.45 33.06 17.20 5.12 615.49 75 80 298.59 147.13 73.99 6.39 3.79 2.32 38.16 20.30 11.18 80 85 59.26 40.70 27.97 19.22 13.22 5.26 4.31 2.97 2.04 9.09 85 90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 37.19 6.76 90 95 26.45 18.81 13.37 9.51 4.81 3.42 2.43 1.73 1.73 95 100 21.30 14.86 10.38 7.25 5.06 3.54 2.47 1.21 0.85 11.55 100 105 21.80 15.87 8.41 6.13 4.47 3.26 2.38 1.73 1.27 6.85 105 110 12.50 9.25 5.07 3.75 2.78 2.06 1.52 1.13 0.83 110 115 28.05 20.49 10.95 8.01 5.86 4.29 3.14 2.30 1.68 0.0 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.77 8.78 120 15.69 4.92 3.69 2.07 1.56 1.17 125 11.74 6.58 0.0 0.0 125 0.0 0.0 0.0 0.0 130 0.0 0.0 0.0 0.0 130 0.0 0.0 0.0 0.0 0.0 0.0 135 0.0 0.0 0.0 0.0 1.93 135 3.19 2.48 1.50 1.17 0.91 0.71 0.55 0.43 0.33 140 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 6.38 4.97 3.87 3.01 2.34 1.82 1.42 1.10 0.86 0.67 150 155 1.93 0.71 0.55 3.19 2.48 1.50 1.17 0.91 0.43 0.33 0.0 0.0 155 0.0 0.0 0.0 160 0.0 0.0 0.0 0.0 0.0 4.97 160 165 6.38 3.87 2.34 1.82 1.42 1.10 0.86 0.67 3.01 3,19 165 170 2.48 1.93 1.17 0.91 0.71 0.55 0.43 0.33 1.50 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.93 230 235 3.19 1.50 1.17 0.91 0.71 0.55 0.43 0.33 2.48 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 0.0 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0 300 0.0 0 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1654.87 330 335 607.50 223.01 81.87 30.05 4.05 1.49 0.55 0.20 11.03 335 340 435.19 4.92 2.01 0.82 177.42 72.36 29.52 12.05 0.34 340 345 200.5 87.01 37.75 7.11 1.34 0.58 0.25 16.38 3.08 0.11 345 350 194.11 87.09 39.07 17.53 7.87 3.53 1.58 0.71 0.32 0.14 350 355 1844.78 696.20 264.44 101.21 39.09 15.25 6.02 2.41 0.98 0.40 355 360 867.6 350.77 141.82 57.35 23.19 9.38 3.79 1.53 0.62 0.25 FIRST HARMONIC AMPLITUDE 3 31549.1113196.06 5666.36 2511.40 1.63 1.78 1.96 2.17 45.95 1155.24 554.20 278.16 146.18 80.31 1.96 PHASE 3.96 2.42 2.70 3.01 3.32 3.64 (IN HOURS) SECOND HARMGNIC AMPLITUDE 22119.01 9183.03 3922.56 1736.11 801.57 196.85 387.85 104.48 57.00 32.88 PHASE 2.02 1.67 1.83 7.48 3.53 3.77 2.24 2.75 3.02 3.28 (IN HOURS)

UTRECHT

THE UPPER LIMIT FOR THIS CALCULATION IS 188.75 GV

UTRECHT GEOGRAPHIC LATITUDE = 52.06 GEOGRAPHIC LONGITUDE = +1.0 ASY.LONG. / BETA = +1.6 +1.4 +0.A +0.6 +0.4 +0.2 0.0 -0.2 200.20 84.42 35.60 15.01 6.33 2.67 1.13 0.47 0.20 0.08 386.68 178.44 82.66 38.44 17.94 8.40 3.95 1.86 0.42 0.88 1.58 1.97 16.55 10 15 194.11 87.09 0.32 41.43 573.50 189.92 15 9.04 0.92 20 88.70 19.35 4.22 0.43 0.20 3397.85 20 1395.24 97.21 25 235.98 6.84 2.83 40.09 1.17 351.78 278.71 30 1825.40 798.89 14.07 6.39 2.92 155.87 69.49 31.18 1.73 35 132.17 1266.60 592.00 63.13 14.70 30.36 99.36 5.21 2.57 35 40 462.63 213.36 22.24 10.71 1.28 0.65 45 756.67 95.35 1.83 40 376.41 188.73 48.53 12.83 6.66 24.87 3.48 45 50 1480.14 286.04 59.62 28.17 6.77 3.44 645.41 129.20 13.64 1.78 45.73 50 55 1316.70 655.36 330.36 13.02 7.06 168.70 87.27 24.26 3.87 199.46 55 60 1123.20 624.81 351.22 114.42 66.26 38.72 22.82 13.55 8.10 60 65 2630.98 594.24 298.56 155.72 46.83 26.76 1228.23 84.10 15.62 82.53 65 70 1331.58 644.00 317.51 159.96 43.67 23.73 13.24 7.58 4.45 75 1.71 70 592.19 277.94 133.23 65.45 33.06 17.20 9.24 5.12 2.92 75 80 615.49 298.59 147.13 73.99 38.16 20.30 11.18 6.39 3.79 2.32 80 85 59.26 40.70 27.97 19.22 13.22 9.09 6.26 4.31 2.97 2.04 85 90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 18.81 3.42 1.73 2.38 1.52 90 13.37 4.81 95 37.19 26.45 9.51 6.76 2.43 1.73 95 100 0.85 21.30 1.21 14.86 7.25 5.06 3.54 2.47 11.55 100 21.80 15.87 4.47 2.78 3.26 1.27 105 8.41 6.13 12.50 3.75 105 9.25 6.85 2.06 0.83 110 5.07 1.13 14.98 110 115 28.05 10.95 5.86 4.29 3.14 8.01 2.30 1.68 20.49 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 11.74 125 15.69 8.78 6.58 4.92 3.69 2.07 1.56 1.17 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 135 140 1.93 0.71 0.55 3.19 2.48 1.50 1.17 0.91 0.43 0.33 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 6.38 4.97 3.87 3.01 2.34 1.82 1.42 1.10 0.86 0.67 150 155 3.19 2.48 1.93 0.91 0.71 0.55 1.50 1.17 0.43 0.33 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 6.38 2.34 160 165 4.97 3.87 1.42 1.10 0.86 0.67 3.01 1.82 165 170 3.19 2.48 1.93 0.91 0.71 0.55 0.43 0.33 1.50 1.17 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 235 1.93 0.91 0.71 0.55 3.19 2.48 1.50 1.17 0.43 0.33 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 275 280 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 1067.81 435.19 177.42 72.36 4.92 2.01 0.82 0.34 29.52 12.05 37.75 340 345 200.51 87.01 16.38 7.11 3.08 1.34 0.58 0.25 0.11 345 350 39.07 194.11 87.09 17.53 3.53 1.58 0.71 0.32 0.14 88.70 1.97 350 355 189.92 41.43 19.35 9.04 0.92 0.43 0.20 4.22 355 360 867.61 141.82 23.19 9.38 3.79 1.53 0.62 0.25 FIRST HARMONIC AMPLITUDE 18367.64 8407.98 3934.05 1887.99 44.82 250.43 76.99 932.42 PHASE 2.18 2.31 2.45 2.62 2.82 3.04 3.27 3.53 3.79 4.06 IN HOURS SECOND HARMONIC AMPLITUDE 13192.31 6072.27 2860.28 1383.19 186.97 101.93 32.83 688.51 57.12 353.32 2.28 2.55 2.41 PHASE 2.70 3.84 2.88 3.06 3.25 3.45 3.65 (IN HOURS)

80

THE UPPER LIMIT FOR THIS CALCULATION IS 111.25 GV

GEDGRAPHIC LATITUDE = \$2.06 GEDGRAPHIC LONGITUDE = 5.07 ASY.LONG./BETA= +1.6 +1.2 +1.0 +0.8 +0.4 +0.2 0.0 +1.4 +0.6 -0.2 200.20 35.60 15.01 0.47 0.20 0.08 84.42 6.33 2.67 1.13 3.95 1.86 386.68 178.44 82.66 38.44 17.94 8.40 0.88 0.42 10 15 194.11 87.09 39.07 17.53 7.87 3.53 1.58 0.32 0.14 189.92 15 20 88.70 41.43 19.35 9.04 4.22 1.97 0.92 0.43 0.20 795.01 0.97 20 25 342.93 148.03 63.94 27.63 11.95 5.17 2.24 0.42 1157.07 5.25 6.77 2.57 25 30 530.08 243.66 112.38 52.00 24.14 11.24 2.46 1.16 1067.31 30 35 510.04 245.01 118.31 57.43 28.02 13.74 3.35 1.67 99.36 35 40 462.63 213.36 46.75 22.24 10.71 5.21 1.28 0.65 756.67 188.73 40 45 95.35 376.41 48.53 24.87 12.83 6.66 3.48 1.83 612.52 45 2.82 1.53 50 294.65 144.21 71.85 36.43 18.79 9.84 5.23 55 330.36 50 168.70 45.73 24.26 13.02 7.06 3.87 655.36 87.27 351.22 55 1123.20 22.82 60 199.46 114.42 13.55 624.81 66.26 8.10 14.54 65 1095.04 197.73 24.09 60 344.30 67.68 40.21 8.83 608.65 115.04 7.42 65 70 1132.29 283.81 76.82 41.33 22.77 12.85 4.38 562.04 146.10 70 592.19 277.94 9.24 2.92 133.23 65.45 33.06 17.20 5.12 615.49 147.13 73.99 6.39 3.79 2.32 80 298.59 38.16 20.30 11.18 80 85 59.26 40.70 27.97 4.31 2.97 19.22 13.22 9.09 6.26 2.04 85 90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.42 90 95 37.19 26.45 18.81 13.37 9.51 4.81 2.43 1.73 6.76 95 100 21.30 10.38 5.06 3,54 2.47 1.21 0.85 14.86 7.25 6.13 100 105 21.80 15.87 11.55 4.47 3.26 2.38 1.73 1.27 105 110 12.50 9.25 6.85 5.07 3.75 2.78 2.06 1.52 1.13 0.83 110 115 28.05 20.49 14.98 10.95 8.01 5.86 4.29 3.14 2.30 1.68 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 15.69 11.74 8.78 6.58 4.92 3.69 2.77 2.07 1.56 1.17 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 0.0 0.0 0.0 0.0 135 0.0 0.0 0.0 0.0 0.0 0.0 1.93 135 140 3.19 1.17 0.55 0.43 2.48 1.50 0.91 0.33 140 0.0 0.0 0.0 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 4.97 3.87 1.10 150 6.38 0.86 2.34 1.42 0.67 3.01 1 . 82 1.93 0.71 150 155 3.19 0.43 0.33 2.48 1.50 1.17 0.91 155 0.0 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 4.97 160 6.38 3.87 1.82 1.42 1.10 0.86 0.67 165 3.01 2.34 1.93 0.71 0.55 165 170 3.19 2.48 0.91 0.33 1.50 1.17 0.43 170 0.0 0.0 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.93 0.55 230 235 3.19 1.17 0.43 2.48 1.50 0.91 0.33 0.0 0.0 0.0 0.0 0.0 235 240 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.47 335 340 200.20 35.60 1.13 0.20 84.42 6.33 2.67 0.08 15.01 37.75 340 345 200.51 87.01 1.34 16.38 3.08 0.25 7.11 0.11 345 350 194.11 87.09 39.07 7.87 3.53 1.58 0.32 0.14 350 355 189.92 88.70 41.43 1.97 0.92 19.35 9.04 0.43 0.20 4.22 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 72.90 AMPLITUDE 11533.25 5666.08 2836.75 406.48 125.99 1450.28 223.40 PHASE 2.59 2.83 3.51 3.94 2.70 2.97 3.13 3.31 4.17 (IN HOURS) SECOND HARMONIC 8744.71 4332.77 2186.58 1125.42 AMPLITUDE 591.32 \$17.32 173.92 97.32 55.55 32.32 PHASE 2.68 2.90 2.78 3.02 3.15 3.29 3.44 3.59 3.75 3.92 (IN HOURS

81

THE UPPER LIMIT FOR THIS CALCULATION IS 80.00 GV

GEDGRAPHIC LATITUDE = \$2.06 GEOGRAPHIC LONGITUDE = 5.07 ASY.LONG. /BETA= +1.2 +1.6 +1.4 +1.0 +0.8 +0.6 +0.4 +0.2 0.0 -0.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 2.61 10 186.17 91.43 44.90 22.05 10.83 5.32 1.28 0.63 0.3 10 15 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 41.43 189.92 19.35 0.43 20 88.70 9.04 4.22 1.97 0.92 0.20 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 562.26 25 271.57 3.49 1.69 30 131.24 63.45 30.70 14.86 7.20 0.82 35 30 42.45 335.94 168.18 84.40 21.40 10.82 5.48 2.78 1.41 35 262.44 128.95 0.56 40 63.76 4.09 2.10 1.08 8.04 45 150.98 40 556.17 289.40 78.97 11.49 6.08 1.72 41.42 21.78 3.22 45 7.13 4.05 50 218.22 123.14 69.54 39.30 22.23 12.59 1.31 2.30 50 55 922.08 253.53 134.79 72.30 39.11 21.33 11.72 481.26 6.49 3.62 55 60 1123.20 624.81 351.22 199.46 114.42 38.72 22.82 13.55 8.10 66.26 60 65 894.84 108.71 524.23 308.70 182.72 39.08 23.61 14.34 65.02 65 70 737.67 387.95 206.98 19.85 11.56 112.18 61.85 34.72 6.85 4.13 6.77 70 75 191.49 59.88 106.51 34.06 19.62 11.45 4.06 2.47 1.52 9.59 75 421.38 80 211.50 108.06 56.45 30.30 16.77 5.68 3.47 2.18 80 85 59.26 27.97 19.22 2.97 2.04 40.70 13.22 9.09 6.26 4.31 0.0 85 90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 37.19 90 95 26.45 18.81 13.37 9.51 6.76 4.81 3.42 2.43 1.73 95 100 21.30 14.86 10.38 7.25 5.06 3.54 2.47 1.73 1.21 0.85 100 105 21.80 11.55 3.26 2.38 1.73 15.87 6.13 4.47 1.27 105 110 12.50 9.25 6.85 5.07 3.75 2.78 2.06 1.52 0.83 1.13 110 115 28.05 20.49 14.98 10.95 8.01 5.86 4.29 3.14 2.30 1.68 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 2.77 15.69 11.74 8.78 6.58 4.92 3.69 2.07 1.56 1.17 125 0.0 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.93 135 1.17 3.19 0.55 140 2.48 1.50 0.91 0.43 0.33 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.87 145 150 4.97 1.42 1.10 0.67 6.38 3.01 2.34 1.82 0.86 0.91 150 155 3.19 2.48 1.50 0.43 0.33 1.17 155 0.0 0.0 0.0 0.0 0.0 0.0 160 0.0 0.0 0.0 0.0 160 165 6.38 4.97 3.87 3.01 2.34 1.82 1.42 1.10 0.86 0.67 165 170 1.93 0.71 0.55 3.19 2.48 1.50 1.17 0.91 0.43 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0,0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.93 230 235 0.71 3.19 1.17 0.55 2.48 1.50 0.91 0.43 0.33 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.97 350 355 189.92 0.92 88.70 41.43 19.35 9.04 0.43 0.20 4.22 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC 597.61 AMPLITUDE 6870.62 3652.20 1967.87 1075.97 193.91 67.58 41.00 PHASE 3.93 3.05 3.14 3.24 3.35 3.47 3.61 3.76 4.11 4.31 IN HOURS SECOND HARMONIC 5727.75 3051.81 1645.27 897.99 90.83 52.98 AMPLITUDE 496.43 278.07 157.86 31.32 PHASE 3.08 3.15 3.23 3.32 3.41 3.51 3.63 3.75 3.88 4.02

UTRECHT

50.00 GV

(IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS

GEOGRAPHIC LATITUDE = 52.06 GEOGRAPHIC LONGITUDE . 5.07 ASY. LONG. / BETA : +1.2 +0.4 +0.2 +1.6 +1.4 +1.0 +0.8 +0.6 0.0 -0.2 0.0 0.0 0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 5 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 10 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 25 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 25 30 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 296.61 155.81 81.85 22.59 3.27 43.00 11.86 6.23 1.72 0.90 35 72.52 22.33 6.88 40 1.18 40.25 12.39 3.82 2.12 0.65 0.36 106.07 8.88 45 369.99 197.97 30.59 2.59 56.92 16.46 1.41 50 218.22 123.14 69.54 12.59 4.05 39.30 22.23 2.30 1.31 55 17.39 50 170.68 30.67 9.88 542.25 303.87 54.23 5.63 96.09 3.21 55 60 750.85 261.41 92.76 55.62 33.50 20.25 12.29 441.94 155.36 7.49 8.75 308.70 108.71 60 65 894.84 524.23 182.72 39.08 23.61 65.02 14.34 70 207.82 120.65 9.35 65 361.58 41.98 25.18 15.26 5.79 3.62 6.77 70 75 191.49 106.51 59.88 34.06 19.62 11.45 4.06 2.47 1.52 75 5.01 80 45,29 31.37 21.73 15.05 10.43 7.23 3.47 2.41 1.67 80 85 59.26 40.70 27.97 19.22 4.31 2.97 2.04 13.22 9.09 6.26 85 90 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 3.42 90 95 37.19 26.45 18.81 13.37 9.51 6.76 4.81 2.43 95 100 21.30 10.38 7.25 5.06 3.54 2.47 1.21 0.85 14.86 100 105 11.55 21.80 15.87 6.13 4.47 3.26 2.38 1.73 1.27 105 110 12.50 9.25 6.85 5.07 3.75 2.78 2.06 1.52 1.13 0.83 110 115 28.05 20.49 14.98 10.95 8.01 5.86 4.29 3.14 2.30 1.68 115 120 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 120 125 2.77 15.69 8.78 3.69 2.07 1.17 11.74 6.58 4.92 1.56 125 130 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 130 135 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 135 140 3.19 2.48 1.50 1.17 0.43 0.33 0.0 140 145 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 145 150 4.97 6.38 3.87 2.34 1.82 1.42 0.67 3.01 1.10 0.86 150 155 1.93 0.71 3.19 2.48 1.50 1.17 0.91 0.55 0.43 0.33 155 160 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 160 165 6.38 4.97 3.87 3.01 1.82 1.42 1.10 0.86 0.67 2.34 165 170 3.19 2.48 1.93 1.50 1.17 0.91 0.71 0.55 0.43 0.33 170 175 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 175 180 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 180 185 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 185 190 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 190 195 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 195 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 200 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.55 0.71 230 235 3.19 1.93 1.17 0.91 0.43 0.33 2.48 1.50 0.0 235 240 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 240 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 245 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 290 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 295 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 295 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 300 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 310 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 315 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 315 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 320 325 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 325 330 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 330 335 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 335 340 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 340 345 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 345 350 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 350 355 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 355 360 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 FIRST HARMONIC AMPLITUDE 3815.71 2194.89 1272.99 37.27 744.88 440.02 262.58 158.38 96.62 59.64 PHASE 3.52 3.59 3.74 3.83 3.94 3.66 4.20 (IN HOURS) SECOND HARMONIC 3491.91 1994.17 1146.03 3.47 3.52 3.57 133,96 79.82 47.95 662.98 386.20 226.60 29.06 PHASE 3.57 3.52 3.63 3.70 3.77 3.86 3.95 4.06 4.17

UTRECHT

IN HOURS

THE UPPER LIMIT FOR THIS CALCULATION IS 29.00 GV

APPENDIX B

AMPLITUDES AND PHASES OF THE STATION RESPONSES ${\hbox{TO A SQUARE WAVE } 60^{O}} \ {\hbox{WIDE}}$

The following section contains the amplitudes and phases of the station responses to a square wave (lunes of the celestial sphere) 60° wide as a function of the asymptotic longitude of the center of the pulse. The exponential of the spectrum (B) ranges from +1.6 to -0.2 and the upper limiting rigidity is 80 GV in all cases.

APATITY
GEOGRAPHIC LATITUDE = 67.55 GEOGRAPHIC LONGITUDE = 33.33

60 DEGREES

١

SCUARE WAVE REPRESENTATION - SIZE =

ASY.LONG./BETA= +0.4 +1.4 +1.2 +1.0 +0.8 +0.6 +0.2 +0.0 -0.2 679.57 0 303.33 1526.20 135.74 60.91 27.40 12.36 5.59 2.54 1.16 5 2.96 1711.32 766.03 343.71 154.60 69.72 31.51 14.28 6.49 1.36 343.71 154.60 10 1711.32 766.03 69.72 31.51 14.28 6.49 2.96 1.36 2.54 15 2181.92 1007.04 467.26 218.01 102.29 48.26 22.90 10.93 5.25 20 3430.47 1576.74 729.16 339.41 159.06 75.07 35.69 17.10 8.26 4.02 1690.53 1927.91 790.54 25 3637.15 372.07 176.29 84.11 40.42 19.58 9.56 4.70 99.94 4129.21 30 431.00 206.56 48.83 24.10 12.02 6.05 2295.05 129.59 35 4846.38 1098.51 531.94 260.82 65.29 33.38 17.33 9.12 729.01 5721.37 40 2825.47 1421.24 203.88 111.16 35.01 381.60 61.80 20.15 6542.54 3306.46 1705.10 7123.16 3650.81 1913.35 897.88 148.57 49.32 482.89 563.88 265.16 84.84 29.13 107.62 1026.42 182.70 39.74 626.30 8200.83 4160.48 2159.32 1148.29 350.53 201.31 118.54 71.48 44.08 8572.19 4353.66 2260.92 1202.58 367.24 211.11 124.58 75.40 46.7R 9009.49 4568.48 2366.84 1255.02 682.03 380.26 217.64 127.87 77.07 47.63 9589.29 4820.47 2476.43 1302.71 702.80 389.31 221.59 129.59 77.82 47.96 9263.41 4655.54 2392.90 378.45 1260.38 681.35 216.10 126.83 76.45 47.29 80 624.97 352.00 203.64 73.72 8015.40 4086.34 2131.46 1139.40 120.97 46.07 1059.05 333.91 194.96 85 7228.92 3720.56 1960.49 586.97 116.77 71.67 45.06 981.26 184.63 90 6551.74 3396.72 1803.08 547.89 313.97 111.35 68.79 43.51 95 6016.05 3118.71 1655.91 901.82 504.19 289.51 170.72 103.32 64.09 40.74 100 4959.58 2499.16 1289.41 683.25 372.85 210.03 122.30 73.65 45.80 29.41 4323.53 2104.63 1045.93 105 533.24 280.37 152.86 86.81 51.51 31.91 20.63 802.98 390.07 110 3547.77 1677.99 193.21 98.18 51.58 28.27 16.28 9.94 65.32 9.61 115 2463.86 1168.40 558.30 131.53 33.21 17.47 5.63 45.18 1903.30 197.95 120 890.34 418.62 94.21 21.88 10.75 5.39 2.80 59.36 6.59 1.79 125 272.35 1280.91 589.09 126.68 28.08 13.46 3.33 421.93 130 896.58 199.58 94.98 45.54 10.84 5.46 22.06 2.85 1.59 135 751.87 1.94 34.43 16.18 1.09 427.65 946.47 18.42 8.49 3.94 193.81 88.12 40.21 0.91 140 1.86 427.65 145 946.47 193.81 18.42 3.94 0.91 88.12 40.21 8.49 1.86 150 427.65 946.47 193.81 88.12 40.21 18.42 8.49 3.94 0.91 1.86 155 764.99 338.52 150.04 29.65 5.94 1.25 13.23 2.69 66.62 0.61 160 764.99 338.52 150.04 66.62 29.65 5.94 2.69 1.25 13.23 0.61 579.87 9.12 47.76 165 252.06 109.66 20.84 4.02 1.79 0.83 0.41 579.87 170 47.76 9.12 252.06 109.66 20.84 4.02 1.79 0.83 0.41 390.66 30.67 175 167.17 71.57 13.17 5.68 2.48 1.10 0.52 0.27 180 390.65 167.16 71.56 30.66 13.16 5.67 2.47 1.09 0.51 185 390.62 167.13 71.53 5.64 2.44 0.48 30.63 13.13 1.06 0.22 190 195.15 34.71 2.61 1.11 0.47 0.21 82.30 14.64 6.18 0.09 195 195.14 34.70 14.63 1.10 0.46 0.20 0.08 82.29 6.17 2.60 200 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 205 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 210 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 215 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 220 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 225 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 230 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 235 0.0 245 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 250 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 255 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 260 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 265 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 270 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 275 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 280 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 285 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 290 0.0 300 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 305 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 310 0.0 320 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 20.77 325 579.80 251.99 109.59 47.69 9.05 3.95 1.72 0.75 0.33 764.92 330 338.45 149.97 66.55 13.16 5.87 2.62 0.53 1.17 335 764.92 149.97 66.55 29.58 5.87 338.45 13.16 2.62 1.17 0.53 340 946.40 427.58 193.74 88.05 40.14 8.42 3.87 1.78 18.35 0.83 427.58 345 946.40 193.74 88.05 8.42 3.87 1.78 40.14 0.83 350 1141.54 509.87 228.44 102.68 46.31 20.95 9.52 4.33 1.98 0.91 53.24 355 1336.99 594.68 265.24 118.65 23.96 10.A2 4.90 2.23 1.02 9589.29 4820.47 2476.43 1302.71 389.31 129.59 77.82 AMPLITUDE 702.80 221.59 47.94 POSITION 70.00 70.00 70.00 70.00 70.00 70.00 70.00 70.00 70.00 70.00 DEGREES -323.33 -323.33 -323.33 -323.33 -323.33 -323.33 -323.33 -323.33 -323.33 (DEGREES)

86

ATHENS
GEOGRAPHIC LATITUDE = 37.97 GEOGRAPHIC LONGITUDE = 23.72

ASY.LONG./BE	TA: +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	1354.36	593.53	260.51	114.52	50.43	22.23	9.83	4.35	1.94	0.87
5	1630.08	713.17	312.43	137.05	60.21	26.47	11.67	5.15	2.29	1.02
10	2153.00	958.65	427.91	191.48	85.92	38.64	17.44	7.89	3.59	1.64
15		1312.79	582.78	259.37	115.75	51.78	23.25	10.46	4.73	2.15
20		1787.91	789.29	349.17	154.82	68.79	30.66	13.69	6.14	2.76
25		2510.84		497.48	222.25	99.53	44.71	20.13	9.10	4.12
30		2859.57		576.17	259.98	117.73	53.55	24.45	11.22	5.17
35		3352.75		687.53	313.01	143.02	65.62	30.22	13.98	6.49
40		3943.30		817.19	374.34	172.21	79.59	36.96	17.24	8.08
45		4332.65		917.46	425.67	198.63	93.25	44.05	20.94	10.02
50	10056.16			983.75	458.30	214.76	101.26	48.05	22.95	11.03
55	11166.82				516.66	243.40	115.44	55.13	26.52	12.84
60	11662.73				564.22	269.56	129.81	63.03	30.86	15.23
65	12259.04				612.06	294.86	143.18	70.10	34.60	17.21
70	12346.36				634.12	308.29	151.20	74.83	37.37	18.82
75	11685.59				619.06	303.41	150.01	74.85	37.68	19.12
80	10842.28				606.14	301.29	151.08	76.45	39.02	20.08
85			2314.06		575.74	291.07	148.43	76.36	39.61	20.71
90			2182.22		549.01	279.20	143.23	74.13	38.69	20.35
95			1998.08		513.71	264.48	137.47	72.13	38,19	20.38
100		3354.84		877.98	455.72	238.73	126.15	67.22	36.12	19.54
105		2875.43		765.78	400.96	211.87	112.93	60.69	32.89	17.94
110		2618.34		722.62	385.08	207.01	112.18	61.25	33.70	18.65
115		2002.03		586.52	320.64	176.37	97.57	54.26	30.36	17.05
120		1655.07	905.68	498.77	276.41	154.09	86.40	48.69	27.61	15.72
125		1270.51	715.83	405.05	230.17	131.32	75.23	43.23	24.96	14.45
130		1005.29	580.35	335.83	194.82	113.28	66.04	38.56	22.60	13.26
135	1636.12	946.48	549.00	319.24	186.12	108.78	63.75	37.41	22.04	13.00
140	1463.21	852.84	498.66	292.42	172.00	101.44	60.02	35.56	21.16	12.61
145	1110.16	660.80	393.97	235.22	140.66	84.23	50.55	30.33	18.26	11.00
150	1045.30		375.31	225.42	135.61	81.69	49.33	29.78	18.04	10.94
155	931.62	560.02	337.28	203.49	122.99	74.45	45.19	27.42	16.70	10.19
160	832.53	501.54	302.75	183.10	110.95	67.34	40.99	24.94	15.23	9.32
165	783.13	471.96	285.04	172.50	104.60	63.54	38.71	23.58	14.41	8.83
170	607.31	373.96	230.62	142.43	88.09	54.54	33.86	21.00	13.05	8.14
175	557.91	344.38	212.91	131.83	81.74	50.74	31.58			
180	480.50	295.80	182.41	112.68	69.71			19.64	12.23	7.65
185	550.77	342.27	212.92	132.60		43.19 51.57	26.83	16.66	10.36	6.47
190	460.01				82.66		32.23	20.14	12.59	7.90
195	454.70	287.09	179.36	112.19	70.24	44.01	27.63	17.34	10.88	6.86
200	377.29	235.89	147.66		70.12	44.04	27.72	17.44	10.97	6.94
205	355.90	225.43	142.86	92.57	58.09 57.51	36.49		14.46	9.10	5.76
210	319.85	202.45	128.21	81.28	51.56	36.51 32.72	23.21	14.75	8.39	5.98
215	291.55	184.00	116.19	73.44	46.45	29.39	18.62	11.80	7.47	4.75
220	291.55	184.00	116.19	73.44	46.45	29.39	18.62	11.80	7.47	4.75
225	291.55	184.00	116.19	73.44	46.45	29.39	18.62	11.80	7.47	4.75
230	227.20	142.57	89.52	56.27	35.39	22.27	14.03	8.84	5.57	3.52
235	227.20	142.57	89.52	56.27	35.39	22.27	14.03	8.84	5.57	3.52
240	227.20	142.57	89.52	56.27	35.39	22.27	14.03	8.84	5.57	3.57
245	64.35	41.43	26.67	17.18	11.06	7.12	4.59	2.95	1.90	1.23
250	64.35	41.43	26.67	17.18	11.06	7.12	4.59	2.95	1.90	1.23
255	28.30	18.45	12.02	7.84	5.11	3.33	2.17	1.41	0.92	0.60
260	28.30	18.45	12.02	7.84	5.11	3.33	2.17	1.41	0.92	0.60
265	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
295	41.36	25.60	15.85	9.81	6.07	3.76	2,33	1.44	0.89	0.55
300	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
305	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
310	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
315	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
320	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
325	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
330	41.36	25.60	15.85	9.81	6.07	3.76	2.33	1.44	0.89	0.55
335	41.36		15.85	9.81	6.07	3.76	2.33			
340	316.65	141.68	64.80	30.45	14.77	7.43	3.88	2.09	0.89	0.55
345	592.37		116.72	52.98	24.55	11.67	5.72	2.89		
350	817.92		154.60	67.28	29.30	12.76	5.57		1.52	0.87
355	1079.07		211.56	93.88	41.73	18.56	8.28	3.70	1.07	0.47
223	1017101	411.45	211.50	43.00	41.13	10.50	0.28	3.70	1.00	0.75
AMPLITUDE	12346.36	5807.30	2752.93	1315.67	634.12	308.29	151.20	76.45	39.61	20.71
POSITION	70.00				70.00	70.00	70.00	80.00	85.00	85.00
(DEGREES)	.0.00							00.00	03.00	02.00
, , , , , , , , , , , , , , , , , , , ,										
PHASE	-313.72	-313.72	-313.72	-313.72	-313.72	-313.72	-313.72	-303.72	-298.72	-298.72
(DEGREES)										
					0.7					

87

THE UPPER LIMIT IS 80.00 GV

DOURBES
GEOGRAPHIC LATITUDE = 50.10 GEOGRAPHIC LONGITUDE = 4.60

ASY.LONG.	BETA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	3947.94	1763.64	790.01	354.86	159.88	72.24	32.74	14.89	6.78	3.10
5		2098.61	954.01	435.55	199.77	92.05	42.63	19.84	9.27	
10		2365.85		492.54	226.23	104.38	48.40	22.55		4.36
15									10.54	4.96
		2592.33		562.48	264.44	125.11	59.59	28.57	13.77	6.69
20		2868.04		626.42	296.09	141.06	67.77	32.83	16.03	7.90
25		3382.82			365.38	177.30	86.91	43.03	21.52	10.88
30		3763.92		878.52	431.66	214.51	108.01	55.01	28.36	14.80
35		4338.24			538.59	277.08	144.84	76.90	41.46	22.68
40	10236.53				643.07	335.58	178.15	96.15	52.74	29.37
45	10709.20	5258.14	2623.12	1330.83	687.15	361.18	193.29	105.25	58.30	32.81
50	10775.27	5307.57	2657.81	1354.41	702.90	371.61	200.17	109.79	61.30	34.79
55	9795.87	4891.03	2482.18	1281.42	673.33	360.17	196.13	108.66	61.23	35.04
60	8674.78	4388.34	2258.56	1183.37	631.44	343.10	189.81	106.82	61.13	35.52
65	8032.98	4085.06	2116.51	1117.89	602.09	330.59	184.98	105.38	61.07	35.95
70		3817.82			575.63	318.26	179.21	102.67	59.80	35.35
75		3424.85		962.63	526.24	293.43	166.74	96.44	56.72	33.86
80		3089.53		895.05	496.56	280.90	161.89	94.93	56.59	34.24
85		2581.43		764.61	429.67	246.37	143.96	85.59	51.71	31.70
90		2115.40		629.35	356.16	206.20	121.91	73.45	45.01	28.00
95		1462.48	784.62	432.65	245.24	142.74	85.15	51.94	32.32	20.47
100	1133.80		355.83	208.96	126.43	78.56	49.93	32.35	21.29	
105	471.36						34.23			14.20
110			181.12	116.40	76.30	50.79	28.65	23.30	15.98	11.04
	235.46		116.25	81.78	57.61	40.61		20.23	14.30	10.14
115	215.54	152.27	107.67	76.19	53.98	38.26	27.15	19.28	13.70	9.77
120	167.80	119.49	85.15	60.72	43.34	30.94	22.11	15.81	11.31	8.12
125	122.05	87.60	63.20	45.51	32.80	23.64	17.05	12.30	8.88	6.43
130	128.36	92.47		48.07	34.70	25.04	18.09	13.07	9.45	6.85
135	128.86	93.25	67.54	48.94	35.51	25.76	18.71	13.60	9.89	7.21
140	88.56	64.88	47.56	34.87	25.59	18.77	13.78	10.13	7.44	5.48
145	79.17	58.20	42.81	31.49	23.19	17.06	12.57	9.27	6.83	5.04
150	72.66	53.53	39.35	28.93	21.29	15.66	11.53	8.50	6.26	4.67
155	63.47	46.85	34.60	25.55	18.89	13.95	10.32	7.64	5.65	4.18
160	50.84	37.50	27.68	20.43	15.10	11.14	8.24	6.10	4.51	3.34
165	48.11	35.62	26.39	19.56	14.51	10.76	8.00	5.95	4.42	3.30
170	26.09		14.72	11.06	8.32	6.25	4.71	3.55	2.67	2.02
175	19.78	14.92	11.26	8.50	6.42	4.85	3.67	2.78	2.10	1.60
180	19.78	14.92	11.26	8.50	6.42	4.85	3.67	2.78	2.10	1.60
185	19.78	14.92	11.26	8.50	6.42	4.85	3.67	2.78	2.10	1.60
190	13.47	10.25	7.80	5.94	4.52	3.45	2.63	2.01	1.53	
195	3.58	2.79	2.17	1.69						1.18
200	7.16	5.58	4.34	3.38	1.31	1.02	0.80	0.62	0.48	0.38
205					2.62	2.04	1.60	1.24	0.96	0.76
	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
210 215	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
220	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
225	3.58		2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
230	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.3R
235	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
240	7.16		4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
245	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
250	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
255	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
260	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
265	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
270	3.58	2.79	2.17	1.69	1.31	1.02	0.80	0.62	0.48	0.38
275	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
280	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
285	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
290	10.74	8.37	6.51	5.07	3.93	3.06	2.40	1.86	1.44	1.14
295	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
300	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
305	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
310	7.16	5.58	4.34	3.38	2.62	2.04	1.60	1.24	0.96	0.76
315	411.94	178.75	78.44	35.09	16.20	7.85	4.09	2.31	1.42	0.96
320	608.02	266.73	117.91	52.80	24.15	11.42	5.69	3.03	1.74	1.10
325	608.02	266.73	117.91	52.80	24.15	11.42	5.69	3.03	1.74	1.10
330	799.87		159.76	72.34	33.28	15.68	7.68	3.96	2.17	
		The Property of the Control of the C								1.30
335	998.52	438.82	193.55	85.81	38.36	17.36	8.02	3.82	1.89	1.01
340	1389.13		277.05	124.64	56.48	25.85	12.01	5.70	2.78	1.43
345	1585.21	707.05	316.52	142.35	64.43	29.42	13.61	6.42	3.10	1.57
350	1773.48	793.86	356.20	160.20	72.25	32.66	14.80	6.73	3.05	1.39
355	2779.11	1228.17	543.87	241.34	107.35	47.85	21.38	9.58	4.29	1.93
		****			*** *					
AMPLITUDE	10775.27				702.90	371.61	200.17	109.79	61.30	35.95
POSITION	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	50.00	65.00
(DEGREES)										
PHASE	-314.60	-314.60	-314.60	-314.60	-314.50	-314.50	-314.60	-314.60	-314.60	-299.60
IDEGREES										

JUNGFRAUJICH
GEOGRAPHIC LATITUDE = 46.55 GEOGRAPHIC LONGITUDE = 7.98

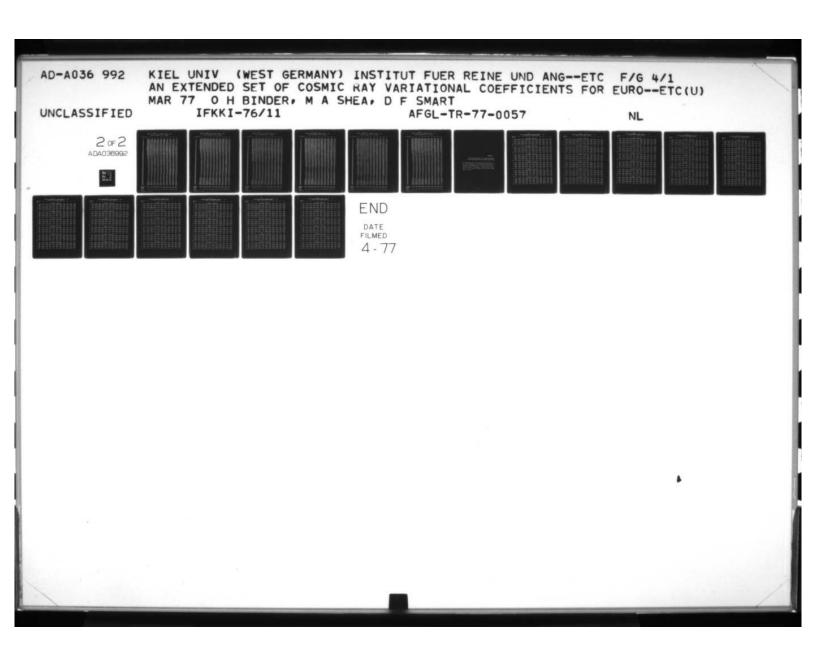
ASY.LONG./BET	A= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
				****		+0.0	.0.4	+0.2	+0.0	0.2
0		1243.05	553.33	247.59	111.60	50.84	23.50	11.10	5.41	2.76
. 5		1690.38	756.14	339.82	153.66	70.08	32.33	15.16	7.29	3.63
10		2127.40	961.51	436.85	199.75	92.09	42.89	20.26	9.76	4.83
15		2476.62		517.07	238.46	110.86	52.03	24.73	11.95	5.91
20 25		2770.26		597.73	280.60	132.85	63.50	30.72	15.08	7.54
30		3095.19		669.35 736.70	314.77	169.96	71.56	34.71	17.08	8.55
35		3663.18		833.04	403.58	197.82	98.19	41.01	20.56	10.47
40		4155.10		950.03	461.37	226.52	112.46	56.47	28.68	14.71
45		4650.62			534.89	266.25	134.16	68.44	35.35	18.46
50	10214.33				592.58	300.26	154.18	80.23	42.29	22.56
55	10264.61	4979.25	2447.26	1219.55	616.51	316.25	164.64	86.98	46.60	25.30
60		4676.36			613.10	320.88	170.49	91.94	50.29	27.87
65		4345.55			601.97	321.59	174.55	96.22	53.82	30.51
70		3943.29			565.50	305.85	168.08	93.79	53.09	30.45
75 80		3636.22		1001.35	539.41	295.53	164.60	93.11	53.44	31.07
85		3278.69 2876.65		915.08 831.83	497.26	275.11	154.84	88.55 85.05	51.38	30.20
90		2610.51		766.10	427.43	242.90	140.43	82.48	49.14	29.65
95		2180.84		655.00	370.07	213.04	124.77	74.23	44.78	27.35
100		1615.01	915.43	527.55	308.87	183.51	110.50	67.37	41.52	25.85
105		1042.76	625.31	378.96	232.00	143.38	89.37	56.18	35.57	22.68
110	920.13	585.85	374.58	240.42	154.91	100.18	64.99	42.32	27.64	18.11
115	677.83	439.33	285.67	186.29	121.84	79.92	52.54	34.64	22.90	15.17
120	464.46	307.39	203.84	135.40	90.10	60.07	40.10	26.82	17.97	12.06
125	312.02	211.53	143.54	97.47	66.25	45.08	30.68	20.91	14.26	9.74
130	288.21	197.80	135.85	93.35	64.19	44.19	30.41	20.96	14.45	9.97
135	225.17		107.66	74.49	51.57	35.74	24.75	17.17	11.91	8.27
140	219.99		107.44	75.14	52.58	36.83	25.79	18.08	12.69	8.91
145 150	220.03	154.06	107.94	75.66	53.06	37.25	26.14	18.37	12.92	9.09
155	159.75	112.57	79.36 72.38	55.97 51.17	39.49 36.19	27.89	19.68	13.91 12.84	9.84	6.45
160	115.50	82.15	58.43	41.58	29.59	21.08	15.00	10.69	7.62	5.43
165	100.71	71.63	50.95	36.26	25.81	18.39	13.09	9.33	6.65	4.74
170	115.50	82.15	58.43	41.58	29.59	21.08	15.00	10.69	7.62	5.43
175	115.50	82.15	58.43	41.58	29.59	21.08	15.00	10.69	7.62	5.43
180	127.53	91.06	65.02	46.46	33.20	23.75	16.98	12.16	8.70	6.23
185	98.00	70.40	50.57	36.35	26.12	18.79	13.51	9.73	7.00	5.04
190	68.43	49.37	35.62	25.72	18.56	13.41	9.69	7.01	5.07	3.67
195	80.46	58.28	42.21	30.60	22.17	16.08	11.67	8.48	6.15	4.47
200	53.64	38.86	28.14	20.40	14.78	10.72	7.78	5.66	4.10	2.98
205	38.85	28.34	20.66	15.08	11.00	8.03	5.87	4.30	3.13	2.29
210 215	38.85 38.85	28.34	20.66	15.08	11.00	8.03	5.87	4.30	3.13	2.29
220	38.85	28.34	20.66	15.08	11.00	8.03	5.87	4.30	3.13	2.29
225	38.85	28.34	20.66	15.08	11.00	8.03	5.87	4.30	3.13	2.29
230	24.06	17.82	13.18	9.76	7.22	5.34	3.96	2.94	2.16	1.60
235	24.06	17.82	13.18	9.76	7.22	5.34	3.96	2.94	2.16	1.60
240	12.03	8.91	6.59	4.88	3.61	2.67	1.98	1.47	1.08	0.80
245	12.03	8.91	6.59	4.88	3.61	2.67	1.98	1.47	1.08	0.80
250	12.03	8.91	6.59	4.88	3.61	2.67	1.98	1.47	1.08	0.80
255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	C.0	0.0
265 270	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320	202.24	85.28	35.96	15.16	6.39	2.70	1.14	0.48	0.20	0.09
325	403.31	172.53	73.82	31.59	13.52	5.79	2.48	1.06	0.45	0.20
330	603.19		114.10	49.66	21.63	9.43	4.11	1.79	0.78	0.35
335 340	795.41	351.98	155.99	89.27	30.77	13.70	9.22	4.66	2.50	0.55
345	1210.75	533.42	236.41	105.70	47.91	22.16	10.56	5.24	2.75	1.44
350	1604.99		323.52	146.77	67.31	31.35	14.92	7.31	3.74	2.02
355	1797.01		365.41	166.33	76.45	35.62	16.91	8.24	4.17	2.27
		0000				32.00	1-17	•••		
AMPLITUDE		4979.25						96.22	53.82	31.07
POSITION	55.00	55.00	55.00	55.00	55.00	65.00	65.00	65.00	65.00	75.00
(DEGREES)										
PHASE	-312-00	-312.98	-312-00	-312 00	-312.00	-302 00	-302.00	-302 00	-302.00	-292.00
(DEGREES)	312.78	312.78	312.70	316.70	312.48	-302.48	302.98	302.48	-302.48	2.42.48
100011000										

THE UPPER LIMIT IS 80.00 GV

KIEL
GEOGRAPHIC LATITUDE = 54.33 GEOGRAPHIC LONGITUDE = 10.13

SQUARE WAVE REPRESENTATION - SIZE = 60 DEGREES

ASY.LONG./BE	TA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	2898.71	1286.58	572.55	255.61	114.60	51.70	23.52	10.86	5.12	2.51
5		1799.67		371.33	169.94	78.28	36.34	17.07	8.14	3.99
10		2137.91	975.85	447.62	206.48	95.87	44.86	21.22	10.17	4.99
15		2362.45		506.76	237.08	111.78	53.18	25.59	12.47	6.22
20	5426.03	2524.37	1183.03	558.77	266.17	127.94	62.12	30.50	15.15	7.67
25			1400.57		325.40	159.51	79.16	39.79	20.27	10.52
30			1756.49		436.83	223.51	116.46	61.80	33.39	18.41
35			2158.67		568.88	300.26	161.48	88.44	49.28	27.97
40			2299.81		622.28	332.56	180.98	100.25	56.47	32.38
45 50			2418.45		653.26	349.51 362.49	190.68	106.01	60.01	34.60
55	10641.15				716.37	383.83	210.09	117.40	66.95	38.95
60			2441.09		677.58	367.90	203.86	115.19	66.35	38.94
65			2219.59		633.26	349.20	196.68	113.02	66.23	39.54
70	7752.12	3967.22	2072.88	1106.77	604.11	337.08	192.21	111.87	66.42	40.18
75			1934.29		573.32	322.94	185.99	109.37	65.63	40.12
80		3348.18		959.29	532.13	302.24	175.64	104.28	63.20	39.02
85		2923.86		848.10	474.05	271.57	159.30	95.53	58.50	36.50
90		2180.76		631.78	353.72	203.41	120.06	72.61	44.96	28.41
95 100		1473.33	760.40	405.41	22 3.98 15 8.49	128.46	76.44	47.06	29.92 22.70	19.51
105	1328.91	671.24	352.78	194.13	112.21	68.12	43.23	28.45	19.33	13.42
110	1136.30	562.55	290.52	157.87	90.72	55.14	35.25	23.46	16.15	11.37
115	138.15	101.27	74.33	54.64	40.20	29.64	21.88	16.15	11.97	8.87
120	120.57	88.86	65.58	48.47	35.87	26.60	19.75	14.67	10.94	8.16
125	81.27	61.05	45.88	34.53	26.00	19.62	14.81	11.17	8.46	6.41
130	56.64	42.82	32.39	24.54	18.61	14.15	10.76	8.17	6.24	4.77
135	35.17	27.19	21.01	16.25	12.57	9.75	7.55	5.83	4.53	3.52
140 145	25.87	20.19	15.73	12.27	9.57	7.48	5.84	4.54	3.55	2.78
150	22.73	17.74	13.83	10.79	8.42	6.58	5.14	4.00	3.13	2.45
155	16.44	12.85	10.02	7.83	6.11	4.78	3.74	2.91	2.28	1.79
160	14.76	11.61	9.13	7.19	5.66	4.46	3.53	2.77	2.20	1.74
165	5.33	4.27	3.42	2.74	2.20	1.77	1.43	1.14	0.93	0.75
170	5.33	4.27	3.42	2.74	2.20	1.77	1.43	1.14	0.93	0.75
175	5.33	4.27	3.42	2.74	2.20	1.77	1.43	1.14	0.93	0.75
180	4.60	3.66	2.91	2.32	1.85	1.48	1.19	0.94	0.76	0.61
185	1.46	1.21	1.01	0.84	0.70	0.58	0.49	0.40	0.34	0.28
190	1.46	1.21	1.01	0.84	0.70	0.58	0.49	0.40	0.34	0.28
195 200	1.46	1.21	1.01	0.84	0.70	0.58	0.49	0.40	0.34	0.28
205	2.19	1.82	1.52	1.26	1.05	0.87	0.73	0.60	0.51	0.42
210	2.19	1.82	1.52	1.26	1.05	0.87	0.73	0.60	0.51	0.42
215	2.19		1.52	1.26	1.05	0.87	0.73	0.60	0.51	0.42
220	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
225	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
230	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
235	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
240 245	2.19	1.83	1.53	1.26	1.05	0.87	0.72	0.60	0.51	0.42
250	2.19	1.83	1.53	1.26	1.05	0.87	0.72	0.60	0.51	0.42
255	2.19	1.83	1.53	1.26	1.05	0.87	0.72	0.60	0.51	0.42
260	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
265	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
270	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
275	1.46	1.22	1.02	0.84	0.70	0.58	0.48	0.40	0.34	0.28
280 285	0.73	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
290	0.73	0.61	0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
295	0.73		0.51	0.42	0.35	0.29	0.24	0.20	0.17	0.14
300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315	197.16	83.14	35.06	14.78	6.23	2.63	1.11	0.47	0.20	0.08
320	586.53	255.21	111.23	48.60	21.33	9.44	4.23	1.94	0.93	0.47
325 330	586.53		111.23	48.60	21.33	9.44	4.23	1.94	0.93	0.47
335	773.57 773.57		152.03	67.65	30.23	13.60	6.17	2.85	1.35	0.67
340	1168.21	511.40	224.27	98.57	43.47	19.27	8.60	3.89	1.80	0.86
345	1543.46			137.98	62.23	28.28	12.98	6.06	2.90	1.45
350	1543.46			137.98	62.23	28.28	12.98	6.06	2.90	1.45
355	1730.50			157.03	71.13	32.44	14.92	6.97	3.32	1.65
AMPLITUDE	10641.15				716.37	383.83	210.09	117.40	66.95	40-18
POSITION (DEGREES)	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	55.00	70.00
, , , , , , , , , , , , , , , , , , , ,										
(DEGREES)	-315.13	-315.13	-315.13	-315.13	-315.13	-315.13	-315.13	-315.13	-315.13	-300.13
					90					





KIEV
GEOGRAPHIC LATITUDE = 50.72 GEOGRAPHIC LONGITUDE = 30.30

SQUARE WAVE REPRESENTATION - SIZE = 60 DEGREES

ASY.LONG./	BETA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	1005.54	440.67	193.41	85.03	37.44	16.51	7.30	3.23	1.43	0.65
,	1210.25	See all descriptions of	231.95	101.76	44.70	19.66	8.67	3.82	1.69	0.76
10	1603.09	715.34	320.47	144.34	65.47	30.01	13.98	6.65	3.28	1.70
15	1796.98		362.76	164.09	74.70	34.32	15.99	7.59	3.72	1.91
20		1156.02	513.89	229.37	102.91	46.52	21.27	9.88	4.71	2.34
25		1697.20	762.65	344.10	156.00	71.17	32.75	15.24	7.22	3.52
30		2217.92		464.89	214.63	99.77	46.78	22.15	10.64	5.22
35		2435.75		512.62	237.34	110.70	52.10	24.77	11.95	5.88
40		2623.57 2986.48		570.65	268.94 315.84	127.76	61.25	29.66 36.61	14.56	7.26 9.31
50		3485.06		790.44	382.21	186.87	92.46	46.32	23.53	12.14
55		3807.67		890.06	437.95	218.22	110.19	56.40	29.29	15.44
60		4510.92			560.14	288.34	150.88	80.24	43.37	23.81
65	10534.69				660.51	344.32	182.57	98.44	53.95	30.03
70	11013.50				705.53	370.47	198.02	107.70	59.56	33.46
75	10875.95				707.54	373.68	201.04	110.13	61.38	34.76
80	10092.82				685.02	365.28	198.30	109.54	61.53	35.09
85		4506.03			639.84	346.13	190.64	106.84	60.87	35.19
90 95		4011.69			589.54	323.20	180.47	102.56	99.24	34.71
100		3454.63		969.48	574.74	317.77	178.97	96.63	56.71	35.33
105		3002.81		860.41	474.49	266.74	152.71	88.95	52.62	31.55
110		2532.91		746.01	418.14	239.19	139.45	82.75	49.88	30.47
115		2126.49		630.05	355.60	205.26	120.94	72.60	44.30	27.40
120		1347.38	728.32	404.64	231.06	135.45	81.35	49.95	31.26	19.86
125	1143.43		359.12	211.02	127.77	79.46	50.57	32.81	21.62	14.40
130	278.16	192.22	133.00	92.11	63.90	44.38	30.86	21.50	15.00	10.46
135	228.20		111.35	77.89	54.58	38.28	26.88	16.91	13.32	9.38
140	199.68		98.61	69.38	48.89	34.48	24.34	17.21	12.18	8.67
145	181.56		90.52	64.00	45.32	32.12	22.80	16.20	11.53	8.21
150	161.95		83.05	59.53	42.74	30.70	22.09	15.90	11.47	8.27
155	127.96		66.66	48.15	34.83	25.20	18.27	13.24	9.62	6.99
165	127.96	92.31	66.66	48.15	34.83	25.20	18.27	13.24	9.62	6.99
170	93.61	68.35	49.97	36.52	26.73	19.56	14.34	10.51	7.73	5.67
175	90.50	66.32	48.67	35.70	26.22	19.25	14.16	10.42	7.69	5.66
180	76.41	55.99	41.09	30.12	22.11	16.21	11.91	8.75	6.45	4.74
185	60.54	44.52	32.79	24.12	17.77	13.07	9.63	7.10	5.25	3.87
190	54.16	39.80	29.29	21.53	15.85	11.65	8.58	6.32	4.67	3.44
195	47.78	35.08	25.79	18.94	13.93	10.23	7.53	5.54	4.09	3.01
200	47.78	35.08	25.79	18.94	13.93	10.23	7.53	5.54	4.09	3.01
205	31.91	23.61	17.49	12.94	9.59	7.09	5.25	3.89	2.89	2.14
210	12.76	9.44	7.00	5.18	3.84	2.84	2.10	1.56	1.16	0.86
215	17.35	13.02	9.78	7.35	5.53	4.15	3.12	2.36	1.78	1.34
220 225	17.35 17.35		9.78	7.35	5.53	4.15	3.12	2.36	1.78	1.34
230	10.97		6.28	4.76	3.61	2.73	2.07	1.58	1.20	0.91
235	4.59		2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
240	4.59		2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
245	4.59		2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
250	4.59		2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
255	4.59		2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
260	4.59		2.78	2,17	1.69	1.31	1.02	0.80	0.62	0.48
265 270	4.59		2.78	2.17	1.69	1.31	1.02	0.80	0.62	0.48
275	4.59 0.0	3.58	2.78	2.17	0.0	0.0	0.0	0.80	0.62	0.48
280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320 325	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
330	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
335	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
340	409.09		74.89	32.05	13.72	5.87	2.52	1.08	0.46	0.20
345	607.26	263.92	114.78	49.95	21.75	9.47	4.14	1.81	0.79	0.35
350	607.26		114.78	49.95	21.75	9.47	4.14	1.81	0.79	0.35
355	801.15				30.98	13.78	6.15	2.75	1.23	0.56
AMPLITUDE	11013.50				707.54	373.68	201.04	110.13	61.53	35.33
POSITION	70.00	70.00	70.00	70.00	75.00	75.00	75.00	75.00	80.00	95.00
(DEGREES)										
PHASE	-320.30	-320.30	-320.30	-320.30	-315.30	-315.30	-315.30	-315.30	-310.30	-295.30
(DEGREES)										

LEEDS
GEOGRAPHIC LATITUDE = 53.82 GEOGRAPHIC LONGITUDE = 358.45

ASY.LONG.	/BETA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	4761.14	2169.80	993.63	457.31	211 44	98.47	46.10	21.70	10.27	4.90
5		2365.90		516.13	211.64	115.76	55.44	26.74	13.00	6.37
10		2537.03		563.09	268.54	129.16	62.69	30.69	15.17	7.57
15		3037.09		689.00	333.50	163.28	80.92	40.59	20.62	10.61
20		3782.86		925.59	469.77	242.79	127.84	68.55	37.42	20.77
25		4262.88			569.91	302.20	163.20	89.69	50.12	28.45
30 35		4786.31			641.75	340.88	192.42	101.70	57.03	32.52
40	10022.71				684.04	367.46	201.48	112.69	64.22	37.28
45	10620.54				716.39	384.16	210.45	117.74	67.19	39.10
50		4780.74			684.38	373.11	207.75	118.09	68.46	40.45
55		4127.20			618.98	343.50	194.80	112.80	66.61	40.08
65		3927.91 3574.97			599.88	335.45 316.13	191.80	112.02	65.10	40.52
70		3320.74		951.45	528.04	300.16	174.65	103.87	63.04	39.00
75		2820.68		825.54	463.08	266.04	156.42	93.97	57.59	35.96
80		1995.11		574.38	321.38	185.07	109.65	66.74	41.64	26.59
90		1434.62	737.64	392.02	216.17	123.94	73.88	45.67	29.16	19.16
95	1442.92	740.81 653.20	395.67	220.81	129.01	78.80 64.31	50.08	32.92 26.68	18.08	15.34
100	912.99		243.64	135.02	78.99	48.75	31.55	21.23	14.72	10.44
105	131.76	96.94	71.43	52.68	38.91	28.80	21.34	15.82	11.75	8.75
110	89.43	66.76	49.89	37.30	27.92	20.94	15.71	11.79	8.86	6.68
115	61.88	46.63	35.18	26.55	20.06	15.19	11.50	8.71	6.60	5.03
120	40.47 26.03	31.05	23.83 15.87	18.29	9.66	7.57	8.30 5.90	4.61	3.59	2.83
130	22.90	17.88	13.97	10.91	8.51	6.67	5.20	4.07	3.17	2.50
135	22.90	17.88	13.97	10.91	8.51	6.67	5.20	4.07	3.17	2.50
140	13.50	10.56	8.27	6.48	5.06	3.98	3.11	2.44	1.90	1.51
145	11.34	8.92	7.04	2,60	2.07	3.47	2.73	2.17	1.70	1.37
155	5.07 6.04	4.04	3.24	3.16	2.53	2.07	1.34	1.08	1.08	0.71
160	6.04	4.84	3.91	3.16	2.53	2.07	1.66	1.35	1.08	0.90
165	2.91	2.40	2.01	1.68	1.38	1.17	0.96	0.81	0.66	0.57
170	3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
175	3.88 3.88	3.20 3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
185	3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
190	3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
195	3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
200	4.85	4.00	3.35	2.80	2.30	1.95	1.60	1.35	1.10	0.95
205	4.85 4.85	4.00	3.35	2.80	2.30	1.95	1.60	1.35	1.10	0.95
215	3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
220	4.85	4.00	3.35	2.80	2.30	1.95	1.60	1.35	1.10	0.95
225	4.85	4.00	3.35	2.80	2.30	1.95	1.60	1.35	1.10	0.95
230 235	3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
240	3.88 3.88	3.20	2.68	2.24	1.84	1.56	1.28	1.08	0.88	0.76
245	2.91	2.40	2.01	1.68	1.38	1.17	0.96	0.81	0.66	0.57
250	2.91	2.40	2.01	1.68	1.38	1.17	0.96	0.81	0.66	0.57
255	2.91	2.40	2.01	1.68	1.30	1.17	0.96	0.81	0.66	0.57
260 265	1.94	0.80	0.67	0.56	0.92	0.78	0.64	0.54	0.44	0.3A
270	0.97		0.67	0.56	0.46	0.39	0.32	0.27	0.22	0.19
275	0.97		0.67	0.56	0.46	0,39	0.32	0.27	0.22	0.19
280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290 295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	393.56			30.83	13.20	5.65	2.42	1.04	0.44	0.19
310	584.21	253.91		48.05	20.93	9.12	3.98	1.74	0.75	0.33
315 320	584.21				20.93	9.12	3.98	1.74	0.75	0.33
325	770.74 967.37			67.05 81.79	29.81 36.03	13.27	7.03	3.11	1.17	0.53
330	1347.16				53.65	24.14	10.91	4.94	2.24	1.02
335	1537.81	684.74	305,65	136.76	61.38	27.61	12.47	5.64	2.55	1.16
340	1537.81				61.38	27.61	12.47	5.64	2.55	1.16
345 350	1724.34				70.26	31.76	14.41	10.33	4.59	1.36
355		1281.26				50.67	39.90	10.22	8.70	2.08
	4210141	. ,,,,,,,	007771	100.70		30.03	3.140	10.34	••••	4.10
AMPLITUDE										40.52
POSITION (DEGREES)	45.00	45.00	45.00	45.00	45.00	45.00	45.00	50.00	50.00	60.00
(DEGMEES)										
PHASE		-673.45	-673.45	-673.45	-673.45	-673.45	-673.45	-668.45	-668.45	-658.45
(DEGREES)										
					92					

GEOGRAPHIC LATITUDE = 65.00 GEOGRAPHIC LONGITUDE = 25.42

ASY.LONG./BE	TA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	1711.32	766.03	343.71	154.60	69.72	31.51	14.27	6.49	2.96	1.36
5	1711.32	766.03	343.71	154.60	69.72	31.51	14.27	6.49	2.96	1.36
10		1020.22	471.14	218.55	101.84	47.66	22.40	10.59	5.03	2.40
15		1746.44	804.05	372.46	173.66	81.51	38.53	18.36	8.82	4.27
20		1857.71	863.33	403.79	190.13	90.15	43.06	20.74	10.07	4.93
25		2195.69		494.84	238.08	115.62	56.70	28.09	14.06	7.11
30		2401.28		572.42	285.82	145.04	74.84	39.29	20.99	11.39
35		3125.36		816.23	428.98	229.74	125.32	69.59	39.30	22.53
40		3410.84		919.98	493.39	270.27	151.09	86.12	49.98	29.48
45			2067.54		594.49	330.42	188.01	109.45	65.10	39.50
50			2201.56		633.16	352.57	201.29	117.76	70.52	43.15
55			2361.29		678.17	377.07	214.97	125.64	75.24	46.10
60			2439.65		695.17	385.52	219.49	128.28	76.95	47.30
65	9589.28	4820.46	2476.43	1302.70	702.78	389.32	221.59	129.58	77.84	47.96
70			2388.91		681.68	378.97	216.51	127.09	76.63	47.38
75			2056.00		609.86	345.12	200.38	119.32	72.84	45.51
80	7214.56	3726.76	1968.99	1065.38	590.85	336.06	196.00	117.16	71.76	44.96
85		3303.96		957.30	535.29	307.20	180.87	109.16	67.50	42.68
90		3098.80		880.08	487.88	278.09	163.02	98.22	60.81	38.67
95		2374.86		636.39	344.83	193.49	112.64	68.01	42.58	27.55
100		2085.14		528.23	277.53	151.21	85.86	50.92	31.60	20.44
105		1420.78	686.91	338.02	170.26	88.46	47.84	27.13	16.28	10.34
110		1157.40	552.89	267.45	131.59	66.31	34.56	18.82	10.85	6.69
115	1669.48	767.00	355.07	166.11	78.91	38.37	19.34	10.25	5.83	3.60
120	1289.83	588.96	271.03	125.93	59.27	28.41	14.00	7.17	3.90	2.28
125	1091.69	504.18	234.26	109.57	51.67	24.62	11.91	5.88	3.02	1.63
130	947.11	428.23	194.35	88.60	40.65	18.82	8.86	4.27	2.16	1.17
135	947.11	428.23	194.35	88.60	40.65	18.82	8.86	4.27	2.16	1.17
140	765.63	339.10	150.58	67.10	30.09	13.63	6.31	3.02	1.55	0.87
145	765.55	339.03	150.51	67.04	30.03	13.58	6.26	2.98	1.51	0.83
150	579.96	252.14	109.73	47.82	20.89	9.16	4.05	1.82	0.85	0.41
155	579.81	252.00	109.60	47.70	20.78	9.06	3.95	1.73	0.77	0.34
160	390.60	167.11	71.51	30.61	13.11	5.62	2.41	1.04	0.46	0.20
165	390.60	167.11	71.51	30.61	13.11	5.62	2.41	1.04	0.46	0.20
170	195.15	82.30	34.71	14.64	6.18	2.61	1.11	0.47	0.21	0.09
175	195.15	82.30	34.71	14.64	6.18	2.61	1.11	0.47	0.21	0.09
180	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
185	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
190	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
195	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
200	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
205	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
210	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
215	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
220	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
225	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
230	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
235	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
240	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
245	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
250	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
255	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
260	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
265	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
270	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
275	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
280	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
285	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
290	0.03		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
295	0.03		0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
300	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
305	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
310	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
315	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
320	390.60	167.11	71.51	30.61	13.11	5.62	2.41	1.04	0.45	0.20
325	579.80	251.99	109.59	47.69	20.77	9.05	3.94	1.72	0.75	0.33
330	764.92	338.45	149.97	66.55	29.58	13.16	5.86	2.62	1.17	0.53
335	764.92	338.45	149.97	66.55	29.58	13.16	5.86	2.62	1.17	0.53
340	946.40	427.58	193.74	88.05	40.14	18.35	8.41	3.87	1.78	0.83
345	1141.54	509.87	228.44	102.68	46.31	20.95	9.51	4.33	1.98	0.91
350	1336.99	594.68	265.24	118.65	53.24	23.96	10.81	4.90	2.23	1.02
355	1526.20			135.74	60.91	27.40	12.35	5.59	2.54	1.16
AMPLITUDE	9589.28	4820.46	2476.43	1302.70	702.78	389.32	221.59	129.58	77.84	47.96
POSITION	65.00				65.00	65.00	65.00	65.00	65.00	65.00
(DEGREES)	0,00	000	02.00	32.00	33.00	32.00		300	32.00	33.00
PHASE	-320.42	-320.42	-320.42	-370.47	-320.42	-320.42	-320.42	-320.42	-320.42	-320.42
(DEGREES)										
					93					

PIC DU MIDI
GEOGRAPHIC LATITUDE = 42.93 GEOGRAPHIC LONGITUDE = 0.25

SQUARE WAVE REPRESENTATION - SIZE = 60 DEGREES

ASY.LONG./	BETA: +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	4548.44	2032.80	911.76	410.75	186.07	84.92	39.12	18.28	8.70	4.25
5		2407.18		493.07	225.12	103.59	48.11	22.64	10.83	5.30
10		2691.61		562.33	259.41	120.61	56.57	26.86	12.94	6.36
15		3059.67		653.02	304.70	143.30	67.98	32.62	15.86	7.84
20		3243.72		700.95	329.44	156.15	74.71	36.16	17.73	8.84
25		3751.47		827.55	393.54	188.88	91.56	44.90	22.30	11.24
30		4033.74		894.91	427.43	206.25	100.62	49.70	24.88	12.64
35			2190.57		505.09	246.37	121.54	60.71	30.72	15.77
40	10428.74				548.94	269.63	133.93	67.35	34.30	17.71
45	10446.70				568.50	281.84	141.25	71.59	36.69	19.00
50	10177.97				583.80	293.75	149.50	76.97	40.09	21.10
55			2269.32		570.03	290.61	149.84	78.15	41.22	21.97
60			2061.85		534.54	277.08	145.29	77.06	41.32	22.38
65			1981.25		531.79	280.99	150.37	81.48	44.68	24.77
70		3631.29		956.32	501.28	266.38	143.45	78.24	43.19	24.11
75		3171.01		868.67	464.78	252.18	138.67	77.22	43.51	24.79
80		2946.85		824.24	445.96	244.77	136.18	76.73	43.75	25.22
85		2532.77		737.42	407.83	229.01	130.44	75.27	43.95	25.95
90		2153.13		648.82	364.02	207.01	119.22	69.46	40.90	24.33
95		1503.97	859.71	496.70	289.86	170.77	101.51	60.83	36.73	22.35
100		1146.43		412.13	249.23	151.55	92.66	56.94	35.16	21.83
105	1483.41	900.26	549.16	336.67	207.36	128.29	79.73	49.74	31.15	19.60
110	1139.89	710.82	444.71	279.15	175.75	110.98	70.30	44.66	28.43	18.17
115	1020.19		404.31	255.80	162.32	103.30	65.95		27.07	17.43
120	873.63			230.77	148.82	96.20	62.36	42.21	26.36	17.22
125	626.95		264.43	172.32	112.52	73.62	48.29	31.72	20.87	13.78
130	621.43	The state of the s	262.89	171.58	112.21	73.53	48.30	31.77	20.94	13.84
135	487.18	321.02	211.88	140.10	92.77	61.52	40.89	27.19	18.11	12.09
140	396.53		175.50	116.98	78.05	52.13	34.88	23.34	15.64	10.50
145	252.54	169.99	114.50	77.20	52.08	35.16	23.77	16.06	10.87	7.37
150	270.55	182.38	123.02	A3.06	56.11	37.93	25.68	17.37	11.77	7.99
155	230.60	157.03	106.96	72.90	49.70	33.89	23.15	15.78	10.78	7.37
160	177.84	121.42	82.92	56.67	38.74	26.49	18.15	12.40	8.50	5.83
165	177.49	122.22	84.18	58.00	39.98	27.56	19.03	13.11	9.05	6.26
170	142.10	98.22	67.90	46.95	32.4A	22.47	15.58	10.76	7.46	5.18
175	124.09	85.83	59.38	41.09	28.45	19.70	13.67	9.45	6.56	4.56
180	88.74	61.11	42.09	29.00	19.99	13.78	9.52	6.55	4.52	3.13
185	88.74	61.11	42.09	29.00	19.99	13.78	9.52	6.55	4.52	3.13
190	71.37	49.50	34.33	23.81	16.52	11.46	7.97	5.52	3.83	2.67
195	53.36	37.11	25.81	17.95	12.49	8.69	6.06	4.21	2.93	2.05
200	53.36	37.11	25.81	17.95	12.49	8.69	6.06	4.21	2.93	2.05
205	53.36	37.11	25.81	17.95	12.49	8.69	6.06	4.21	2.93	2.05
210	35.35	24.72	17.29	12.09	8.46	5.92	4.15	2.90	2.03	1.43
215	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
220	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
225	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
230	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
235	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
240	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
245	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
250 255	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
260	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
265	17.34	0.0	8.77	0.0	0.0	0.0	0.0	0.0	0.0	0.0
270	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	
275	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
280	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
285	17.34	12.33	8.77	6.23	4.43	3,15	2.24	1.59	1.13	0.81
290	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
295	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
300	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
305	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
310	17.34	12.33	8.77	6.23	4.43	3.15	2.24	1.59	1.13	0.81
315	455.22	199.65	88.92	40.53	19.11	9.44	4.93	2.74	1.62	1.02
320	672.45	297.12	132.65	60.15	27.91	13.39	6.70	3.54	1.98	1.18
325	655.11	284.79	123.88	53.92	23.48	10.24	4.46	1.95	0.85	0.37
330	863.59		169.36	75.16	33.40	14.87	6.62	2.96	1.32	0.59
335	1083.17		200.40	91.62	40.34	17.80	7.85	3.48	1.54	0.68
340	1301.47		249.51	109.46	48.08	21.16	9.31	4.11	1.81	0.80
345	1746.85	782.81	352.85	160.29	73.58	34.29	16.28	7.95	4.01	2.17
350		1065.36	476.42	214.46	97.39	44.78	20.91	10.00	4.92	2.53
355	3267.91	1444.87	641.40	286.22	128.62	58.37	26.83	12.58	6.05	3.02
AMPLITUDE	10446.70	4970 44	2388-22	1173.48	583.80	293.75	150.37	81.48	44.68	25.95
POSITION	45.00			50.00	50.00	50.00	65.00	65.00	65.00	85.00
(DEGREES)										
PHASE	-218 15	-215 25	-215-25	-310 35	-310 35	-310 35	-105			-176
(DEGREES)	-313.25	-313.25	-313.63	-310.25	-510.25	-310.25	-243.25	-243.25	-243.25	-213.25
(DEGMEES)					94					
					, 4					

ROME
GEOGRAPHIC LATITUDE = 41.90 GEOGRAPHIC LONGITUDE = 12.52

ASY.LONG./B	ETA= +1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
0	2077.44	929.92	417.25	187.68	84.61	38.25	17.32	7.88	3.60	1.65
5	2788.49	1232.66	546.17	242.59	108.00	48.22	21.57	9.69	4.37	1.98
10		1957.73		389.61	174.44	78.32	35.24	15.92	7.21	3.28
15 20		2466.02 2782.13		502.55	228.11	103.96	47.56 54.57	21.87	10.10	4.69
25		3069.56		642.56	296.06	137.11	63.82	25.16	11.65	5.47
30		3525.57		752.40	350.38	164.11	77.32	36.65	17.48	8.40
35		3700.01		795.03	371.96	175.19	83.09	39.69	19.09	9.26
40		4256.68		937.85	445.11	212.93	102.69	49.93	24.48	12.11
50	10545.28				538.26	261.58	128.35	56.21 63.57	31.79	13.84
55	10882.47	5145.26	2453.80	1180.89	573.64	281.36	139.37	69.71	35.21	17.96
60	10994.31				599.39	297.35	149.14	75.61	38.75	20.07
65 70	10632.17	5122.71			608.86	305.71	155.14	79.54	41.21	21.56
75		4074.90			558.01	284.97	147.09	76.69	40.40	21.48
80		3828.45		987.67	510.82	267.31	141.47	75.66	40.89	22.30
85		3566.42		944.84	495.75	263.35	141.56	76.93	42.27	23.44
90 95		3053.00		834.04	444.76	240.18	131.25	72.51	40.49	22.81
100		2831.15 2339.03		791.58	426.74	232.85	128.51	71.66	40.38	22.95
105		1799.54		563.84	320.19	183.47	106.02	61.74	36.24	21.41
110		1408.98	805.18	463.60	268.87	157.02	92.30	54.59	32.50	19.44
115		1063.38	633.11	378.44	227.09	136.79	82.70	50.17	30.56	18.66
120	1489.77	892.85 729.76	537.48	324.94 278.75	197.25	120.22	73.55	45.15	27.83	17.19
130	1082.61	669.16		257.76	160.62	100.34	67.08	41.93	26.28	15.65
135	911.64	567.02	353.73	221.33	138.89	87.37	55.11	34.85	22.11	14.03
140	790.23			198.22	125.52	79.52	50.60	32.22	20.57	13.13
145	618.78		252.39	161.59	103.62	66.54	42.79	27.56	17.79	11.47
150 155	563.64	360.38	230.80	148.09	95.18	56.48	39.49	25.50	15.65	10.67
160	391.20	254.25	165.48	107.88	70.43	46.04	30.13	19.75	12.98	8.50
165	334.56	220.06	144.86	95.47	62.99	41.59	27.48	18.18	12.05	7.96
170	336.97	222.36	146.87	97.12	64.30	42.62	28.26	18.77	12.48	8.28
175	241.17		108.10	72.44	48.58	32.60	21.87	14.69	9.88	6.62
180 185	208.11	139.34	93.33	62.57	41.98	28.19	18.92	12.72	6.88	5.74
190	145.50	98.14	66.20	44.67	30.16	20.38	13.76	9.30	6.29	4.24
195	128.97	87.09	58.82	39.74	26.86	18.18	12.29	8.32	5.63	3.80
200	128.97	87.09		39.74	26.86	18.18	12.29	8.32	5.63	3.80
205	94.40	64.28	43.77	29.81	20.31	13.85	9.43	6.43	4.38	2.98
215	77.87 57.42	53.23 39.17	36.39 26.72	18.23	17.01	8.50	7.96	5.45 3.96	3.72 2.70	2.54
220	94.39	64.28	43.77	29.81	20.31	13.85	9.44	6.43	4.38	2.98
225	57.42	39.17	26.72	18.23	12.44	8.50	5.80	3.96	2.70	1.84
230	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
235 240	36.97 36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
245	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
250	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
255	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
260 265	36.97 36.97	25.11	17.05	11.58	7.87 7.87	5.35	3.64	2.47	1.68	1.14
270	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
275	36.97	25.11	17.05	11.58	7.87	5.35	3.64	2.47	1.68	1.14
280	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285 290	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
300	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310 315	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
320	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
325	236.89	99.89	42.12	17.76	7.49	3.16	1.33	0.56	0.24	0.10
330	474.15			37.15	15.90	6.81	2.91	1.25	0.54	0.23
335 340	703.84	305.90		57.90 57.90	25.21	10.99	4.78	2.09	0.92	0.40
345	1165.46			98.56	43.39	19.14	8.44	3.74	1.67	0.40
350	1402.72	613.71	268.86	117.95	51.80	22.79	10.02	4.43	1.97	0.87
355	1852.71	824.96	368.23	164.79	73.92	33.26	14.99	6.79	3.09	1.41
AMPLITUDE	10994.31					305.71		79.54	42.27	23.44
(DEGREES)	60.00	60.00	60.00	65.00	65.00	65.00	65.00	65.00	85.00	85.00
	-312.65		-2:: -2	207 00	267		-107	- * * * * * * * * * * * * * * * * * * *		
(DEGREES)	-312.52	-312.52	-312.52	-307.52	-307.52	-307.52	-307.52	-307.52	-287.52	-287.57

UTRECHT
GEOGRAPHIC LATITUDE = 52.06 GEOGRAPHIC LONGITUDE = 5.07

ASY . LONG .	BETA-	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	+0.0	-0.2
•		2707 72	1450 00	7// 20	224 02			21 01	14		
0			1658.88	744.30	334.92	151.16	68.41	31.06	14.13	6.46	2.95
5			2168.92	989.31	453.23	208.59	96.43	44.80	20.90	9.81	4.62
10				1053.07		224.50	104.47	46.88	23.00	10.89	5.19
15				1204.05		265.92	126.26	60.37	29.08	14.12	6.91
20		6012.04	2794.82	1309.19		294.48	141.52	68.63	33.60	16.62	8.30
25		7138.82	3361.48	1598.12	767.61	372.71	183.03	90.92	45.70	23.25	11.97
30		8262.02	3986.29	1949.34	967.07	487.13	249.29	129.64	68.52	36.80	20.07
35				2258.04		595.84	314.30	168.72	92.14	51.14	28.82
40					1257.45		347.23	187.54	103.13	57.68	32.78
45	1				1305.37		360.90	195.20	107.54	60.28	34.35
50				2659.05		709.03	376.98	204.41	113.01	63.64	36.47
55				2538.99		694.62			115.08	65.64	38.09
60				2295.33		642.62		194.26			36.93
65					1097.97	594.70	328.72		109.83	63.18	
									106.48	62.26	36.99
70				1980.15		577.52	321.55		105.64	62.19	37.19
75			3419.92		971.53	535.12	301.15	173.02	101.36	60.44	36.63
80			3134.52		904.75	502.44	285.14	165.24	97.65	58.75	35.93
85			2499.65		747.00	423.18	245.27	145.27	87.77	53.99	33.74
90		3615.11		999.01	547.54	308.76	179.01	106.55	64.95	40.44	25.64
95		2535.76	1277.93	663.49	356.39	198.64	115.02	69.11	42.93	27.46	17.98
100		1403.47	715.89	379.68	210.29	121.82	73.69	46.34	30.08	20.04	13.60
105		811.28	437.95	246.45	144.84	88.76	56.49	37.10	24.96	17.12	11.89
110		198.98	141.84	101.25	72.35	51.77	37.10	26.63	19.12	13.76	9.90
115		139.72	101.14	73.28	53.13	38.55		20.37	14.81	10.79	7.86
120		146.10	106.11	77.15	56.14	40.89	29.83	21.79	15.91	11.65	8.53
125		112.10	82.14	60.27	44.27	32.55	23.98	17.69	13.04	9.65	7.13
130		90.80	67.28	49.89	37.02	27.49		15.22			
135		75.38	56.38	42.21	31.62	23.70	17.79	13.38	11.31	8.44 7.57	6.28
140					28.05				10.03		5.68
		66.07	49.61	37.29		21.12	15.92	12.03	9.06	6.87	5.18
145		38.02	29.12	22.31	17.10	13.11	10.06	7.74	5.92	4.57	3.50
150		38.02	29.12	22.31	17.10	13.11	10.06	7.74	5.92	4.57	3.50
155		22.33	17.38	13.53	10.52	8.19	6.37	4.97	3.85	3.01	2.33
160		22.33	17.38	13.53	10.52	8.19	6.37	4.97	3.85	3.01	2.33
165		22.33	17.38	13.53	10.52	8.19	6.37	4.97	3.85	3.01	2.33
170		19.14	14.90	11.60	9.02	7.02	5.46	4.26	3.30	2.58	2.00
175		19.14	14.90	11.60	9.02	7.02	5.46	4.26	3.30	2.58	2.00
180		12.76	9.93	7.73	6.01	4.68	3.64	2.84	2.20	1.72	1.33
185		9.57	7.45	5.80	4.51	3.51	2.73	2.13	1.65	1.29	1.00
190		9.57	7.45	5.80	4.51	3.51	2.73	2.13	1.65	1.29	1.00
195		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
200		0.0	0.0	0.0	0.0		0.0	0.0	0.0		
205						0.0				0.0	0.0
		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
210		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
215		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
220		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
225		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
230		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
235		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
240		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
245		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
250		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
255		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
260		3.19	2.48	1.93	1.50	1.17	0.91	0.71	0.55	0.43	0.33
265		0.0	0.0	0.0	0.0				0.0		
270		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
275		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
280		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
285		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
290		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
295											
300		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
305		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
310		200.20	84.42	35.60	15.01	6.33	2.67	1.13	0.47	0.20	0.08
315		400.71	171.43	73.35	31.39	13.44	5.75	2.47	1.05	0.45	0.19
320		594.82	258.52	112.42	48.92	21.31	9.28	4.05	1.76	0.77	0.33
325		784.74	347.22	153.85	68.27	30.35	13.50	6.02	2.68	1.20	0.53
330		784.74	347.22	153.85	68.27	30.35	13.50	6.02	2.68	1.20	0.53
335		984.94	431.64	189.45	83.28	36.68	16.17	7.15	3.15	1.40	0.61
340		1371.62	610.08	272.11	121.72	54.62	24.57	11.10	5.01	2.28	1.03
345		1565.73	697.17	311.18	139.25	62.49	28.10	12.68	5.72	2.60	1.17
350		1755.65	785.87	352.61	158.60	71.53	32.32	14.65	6.64	3.03	1.37
355			1128.80	500.64	222.54	99.16	44.27	19.82	8.88	4.00	1.79
		2220.00	1120.00	200.04	222.54	47.16	44.21	17.62	0.00	4.00	1.74
AMOL TTURE		0724 12	5204 84	2659.05	1340 01	709 00	374 00	205 50	115 00		20 00
AMPLITUDE	,					709.03		205.50	115.08	65.64	38.09
POSITION		50.00	50.00	50.00	50.00	50.00	50.00	55.00	55.00	55.00	55.00
(DEGREES)											
PHASE		-315.07	-315.07	-315.07	-315.07	-315.07	-315.07	-310.07	-310.07	-310.07	-310.07
(DEGREES)											
						9.6					

APPENDIX C

AMPLITUDES AND PHASES OF THE STATION RESPONSES
TO SELECTED SQUARE WAVES AND ISOTROPIC MODULATIONS

The following section lists the amplitudes and phases of the station responses to 10° , 30° and 60° square waves and isotropic (360°) modulations as a function of the upper limiting rigidity. The exponent of the spectrum (β) ranges from +1.6 to -0.2 while the upper limiting rigidity ranges from 29 to 500 GV.

APATITY

GEOGRAPHIC LATITUDE = 67.55 GEOGRAPHIC LONGITUDE = 33.33

SQUARE WAVE AMPLITUDE AND PHASE (DEGREES)

				SQUARE WAY			ASE (DEGRI		33.33		
WIDTH (DEG)	I/BETA .	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				UP	PER LIMIT		no GV				
10	AMPL.	24366.06	8336.17	2909.93	1040.02	383.10	149.91	89.51	54.20	33.20	20.55
	PHASE	11.67	11.67	11.67	11.67	16.67	36.67	36.67	36.67	36.67	36.67
30	AMPL.	33714.90	11749.60	4214.89	1653.64	731.68	345.80	186.67	109.95	67.15	42.25
	PHASE	16.67	16.67	16.67	26.67	26.67	26.67	41.67	41.67	41.67	41.67
60	AMPL.	58142.66	19472.82	6846.12	2778.96	1206.80	563.18	282.14	150.88	85.39	50.71
	PHASE	-13.33		31.67	31.67	31.67	31.67	31.67	31.67	31.67	36.67
360	AMPL.	96997.78	33960.61	12332.62	4690.47	1888.16	812.25	375.77	187.20	100.02	56.88
										10000	30.00
10	AMPL.	9411.52	3737.74	1499.76	PER LIMIT 608.85	255.24	75 GV 149.91	89.51	54.20	33.20	20.55
	PHASE	16.67		16.67	16.67	36.67	36.67	36.67	36.67	36.67	36.67
30	AMDI	12520 22	5071 10	2434 72	1220 02	500 04	210 50	100.00	107.00	44	42.44
30	PHASE	13529.23	5871.18	2636.72	1230.92 26.67	599.06	310.59 41.67	180.09	107.88	66.49	42.04
60	AMPL. PHASE	22403.28	9667.90	4309.30	1994.78	963.48	487.08	258.01	143.05	82.97	49.97
	PHASE	41.01	41.01	41.01	41.07	41.67	41.07	41.07	41.07	30.07	36.67
360	AMPL.	34521.81	14497.52	6255.10	2788.23	1291.36	624.57	316.62	168.53	94.07	54.99
				UP	PER LIMIT	. 111.	25 GV				
10	AMPL.		1961.24	847.61	443.34	255.24	149.91	89.51	54.20	33.20	20.55
	PHASE	16.67	16.67	16.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67
30	AMPL.	8689.90	4094.68	1984.57	991.52	527.70	299.84	176.15	106.43	65.96	41.84
	PHASE	26.67	26.67	26.67	26.67	36.67	41.67	41.67	41.67	41.67	41.67
60	AMPL.	14337.73	6707.06	3222.39	1595.78	817.01	435.04	240.06	137.06	80.85	49.18
•	PHASE	41.67		41.67	41.67	41.67	36.67	36.67	36.67	36.67	36.67
360	AMPL.	20003.82	9168.01	4298.47	2070.03	1027.72	527.80	281.08	155.48	89.29	53.21
300		20003.02	7100.01				321.00	201.00	193.40	07.24	33.21
					PER LIMIT		00 GV				
10	PHASE	2048.88	1100.54 36.67	650.36 36.67	36.67	232.63	140.76 36.67	85.83	52.71 36.67	32.60	20.31
30	AMPL. PHASE	5320.87 36.67	2812.64	1524.43	847.18 36.67	482.48 36.67	281.54	168.77	103.45	64.75	41.36
					30.07	30.07				41.07	
60	AMPL.	9589.29	4820.47		1302.71	702.80	389.31	221.59	129.59	77.82	47.96
	PHASE	36.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67
360	AMPL.	12392.34	6090.73	3054.43	1566.93	824.24	445.49	247.82	142.01	83.84	51.00
				LIP	PER LIMIT	. 50.	00 GV				
10	AMPL.	1877.64	1100.54	650.36	387.44	232.63	140.76	85.83	52.71	32.60	20.31
	PHASE	36.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67	36.67
30	AMPL.	3949.90	2197.02	1249.44	728.29	431.53	260.01	159.35	99.30	62.93	40.57
	PHASE	46.67	46.67	41.67	41.67	41.67	41.67	41.67	41.67	41.67	41.67
60	AMPL.	6110-46	-3308.52	1818.88	1016.55	578.19	335.03	197.92	119.24	73.31	46.00
•	PHASE	31.67	31.67	31.67	31.67	31.67	31.67	31.67	31.67	31.67	31.67
360	AMPL.	7174 11	1022 01	2068.11	1127 70	407 20	244 04	*** **		77	
300	AAPL.	1114.11	3022.01	2000.11	1137.10	637.32	364.06	212.31	126.51	77.07	48.06
10		. 1404	1011 45		PER LIMIT		00 GV				
10	PHASE	1696.16		36.67	365.94	36.67	135.58 36.67	83.28	36.67	31.98	20.01
30	PHASE	3037.46			36.67	36.67	36.67	36.67	93.75	60.25	39.27
									41.67	41.67	
60	AMPL.	3729.38			752.91	451.44	274.05	168.58	105.10	66.50	42.70
	PHASE		31.67	31.67	31.67	31.67	31.67	31.67	31.67	31.67	31.67
360	AMPL.	3874.71	2242.52	1310.74	774.48	463.02	280.37	172.11	107.17	67.78	43.56

ATHENS
GEOGRAPHIC LATITUDE = 37.97 GEOGRAPHIC LONGITUDE = 23.72

				SQUARE WAY			ASE (DEGR		23.12		
WIDTH	H/BETA	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				118	PER LIMIT	= 500.	00 GV				
10	AMPL.	36315.70	11434.84		1238.24	425.88	152.46	59.25	23.25	9.27	4.69
	PHASE	6.28	6.28		11.28	11.28	16.28	16.28	16.28	46.28	61.28
30	AMPL.	69802.42	23433.22	8031.39	2800.22	994.74	360.51	133.87	54.30	25.50	13.02
	PHASE	6.28	16.28	16.28	16.28	16.28	16.28	21.28	26.28	61.28	61.28
60	AMPI .	104592.00	35746.70	12475-14	4457.17	1634.28	621.40	248.50	106.40	48.14	22.64
	PHASE	21.28	21.28		21.28	21.28	31.28	31.28	41.28	41.28	46.28
360	AMPL.	136161.90	47440.81	17071.60	6388.48	2503.02	1032.46	449.73	206.72	100.01	50.57
				UP	PER LIMIT	= 188.	75 GV				
10	AMPL.	16291.66	6223.43		921.77	357.84	139.86	55.08	21.87	9.00	4.69
	PHASE	16.28	16.28	16.28	16.28	16.28	16.28	16.28	16.28	61.28	61.28
30	AMPL.	26622.84	10545.77	4213.32	1699.08	692.10	284.96	118.66	50.00	25.04	12.87
	PHASE	26.28	26.28	The second second	26.28	26.28	26.28	26.28	26.28	61.28	61.28
60	AMPL.	24520 20	14956.26	4211 14	2420 50	1104 64	491.34	210 47	99.18	4	
00	PHASE	41.28			2620.50 41.28	1124.56	41.28	218.67	41.28	45.83	61.28
360	AMPL.	48028.37	19984.63	8498.21	3705.05	1661.16	767.71	366.29	180.39	91.66	47.93
					PER LIMIT						
10	AMPL.	6677.51	2758.60		473.13	196.47	81.74	34.13	17.44	9.00	4.69
	PHASE	21.28			21.28	21.28	21.28	41.28	61.28	61.28	61.28
30	AMPL.	13993.81	5994.75	2582.68	1119.51	488.47	214.63	97.84	47.69	24.29	12.60
	PHASE	31.28			31.28	31.28	31.28	51.28	51.28	61.28	61.28
60	AMPL.	20407 44	9183.65	4118.08	1867.69	857.35	398.58	187.70	89.59	43.34	21.74
•	PHASE	46.28			46.28	46.28	46.28	46.28	46.28	46.28	61.28
360	AMPL.	27548.15	12466.38	5738.27	2691.90	1289.24	631.18	316.16	161.99	84.90	45.45
				UP	PER LIMIT	= 80.	00 GV				
10	AMPL.	2695.61	1215.62		273.10	131.14	64.27	32.81	16.90	8.78	4.64
	PHASE	26.28	46.28	46.28	46.28	46.28	61.28	61.28	61.28	61.28	66.28
30	AMPL.	7074.07	3255.58	1508.13	729.99	359.26	178.31	89.23	45.11	23.44	12.26
	PHASE	36.28	36.28	51.28	56.28	56.28	56.28	56.28	61.28	61.28	61.28
60	AMPL.	12346.36	5807.30	2752.93	1315.67	634.12	308.29	151.20	76.45	39.61	20.71
	PHASE	46.28	46.28		46.28	46.28	46.28	46.28	56.28	61.28	61.28
360	AMPL.	16810.79	8125.36	3983.07	1982.16	1002.23	515.10	269.23	143.01	77.23	42.36
				110	PER LIMIT	- 50	00 GV				
10	AMPL.	1494.25	759.63		202.52	105.39	55.14	29.00	15.45	8.27	4.44
	PHASE	41.28			71.28	71.28	71.28	71.28	66.28	66.28	66.28
		2004									
30	AMPL. PHASE	3994.18 56.28	2026.35	1032.35	531.30	276.30	61.28	75.74 61.28	39.94	21.15	11.24
60	AMPL. PHASE	6761.08 56.28			900.58	467.26	243.66 61.28	127.72	67.30	35.63	18.97
					61.28	61.28			61.28	61.28	71.28
360	AMPL.	9449.55	4926.05	2591.70	1376.69	738.57	400.19	219.12	121.15	67.66	38.18
				UP	PER LIMIT	. 29.	00 GV				
10	AMPL.	859.17			138.75	75.75	41.40	22.66	12.42	6.81	3.74
	PHASE	66.28	66.28	66.28	66.28	66.28	66.28	66.28	66.28	66.28	66.28
30	AMPL.	2075.88	1123.10	611.33	337.42	186.58	103.35	57.36	31.89	17.76	9.91
	PHASE	61.28	61.28	76.28	76.28	76.28	76.28	76.28	76.28	76.28	76.28
60	AMPL.	3326.71	1820.02	997.70	548.02	301.66	166.39	91.99	51.19	28.85	16.35
-	PHASE	71.28	71.28		71.28	71.28	71.28	71.28	76.28	86.28	86.28
360	AMPL.	4795.17			864.32	492.70	282.15	162.42	93.87	54.53	31.85
			2070111	1525129	004.32	772.10	202.17	102.42	73.07	74133	31.63

				C LATITUDE			APHIC LON		4.60		-
WIDTH (DEG)	A/BETA	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
10	AMPL.	23776.03	7001 30	2636.20	PER LIMIT		00 GV 158.45	84.17	46.95	24 01	15 40
	PHASE	10.40	7881.30	10.40	907.00 15.40	335.02 15.40	55.40	60.40	60.40	26.81	15.60
30	AMPL. PHASE	44280.10 15.40	15112.64 15.40	5261.28 15.40	1872.78	683.09 15.40	328.36 50.40	167.46	88.65	50.02	28.86
60	AMPL. PHASE	69219.99	23144.65	8465.18	3227.26	1322.37	575.62 35.40	269.19	133.06	68.70	37.59 45.40
360	AMPL.	100502.30			4851.19	1948.87	835.27	384.15	189.61	99.98	55.91
					PER LIMIT	= 188.	75 GV				
10	AMPL.	12185.20	4655.27	1785.70	687.97	295.47	155.15	84.17	46.95	26.81	15.60
	PHASE	15.40	15.40	15.40	15.40	60.40	60.40	60.40	60.40	60.40	60.40
30	AMPL. PHASE	18648.08	7432.15	2997.63	1225.38	603.01 50.40	306.75 50.40	160.64	86.50	49.34	28.65
	FILADE	23.40	23.40	23.40	23.40	30.40	30.40	30.40	00.40	00.40	00.40
60	AMPL.		12034.17	5202.92	2315.25	1063.65	505.52	248.76	126.62	67.34	37.17
	PHASE	40.40	40.40	40.40	40.40	40.40	40.40	40.40	40.40	45.40	45.40
360	AMPL.	35757.68	15009.58	6470.55	2879.90	1330.40	640.77	322.84	170.25	93.86	53.95
				UP	PER LIMIT	= 111.	25 GV				
10	AMPL.	5478.87	2304.32	972.83	500.82	265.11	144.01	80.08	45.45	26.26	15.40
	PHASE	20.40	20.40	20.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40
30	AMPL .	9411.30	4318.00	2111.91	1057.63	542.29	284.47	152.66	85.00	48.79	28.45
	PHASE	30.40	50.40	50.40	50.40	50.40	50 @0	55.40	60.40	60.40	60.40
60	AMPL.	16910.28	7787.89	3660.67	1759.93	866.89	437.94	226.99	120.65	65.68	36.72
	PHASE	45.40	45.40	45.40	45.40	45.40	45.40	45.40	45.40	45.40	60.40
360	AMPL.	20712.49	9486.53	4443.05	2135.60	1057.17	540.48	286.01	156.74	88.89	52.14
				UP	PER LIMIT	= 80.	00 GV				
10	AMPL.	2914.96	1506.19	795.32	428.89	235.92	132.16	75.27	43.50	25.47	15.08
	PHASE	60.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40
30	AMPL.	6404.45	3255.01	1682.12	883.83	472.25	258.66	144.02	81.90	47.54	27.94
	PHASE	50.40	50.40	50.40	50.40	55.40	55.40	55.40	60.40	60.40	60.40
60	AMPL.	10775.27	5307.57	2657.81	1354.41	702.90	371.61	200.17	109.79	61.30	35.95
	PHASE	45.40	45.40	45.40	45.40	45.40	45.40	45.40	45.40	45.40	60.40
360	AMPL.	12824.62	6297.55	3153.66	1614.21	846.32	455.21	251.53	142.78	83.24	49.86
				110	PER LIMIT	. 50.	00 GV				
10	AMPL.	1909.34	1071.88	607.65	347.76	200.83	116.98	68.69	40.65	24.23	14.54
	PHASE	60.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40
30	AMPL.	4399.35	2383.69		722.22	406.55	231.51	133.33	77.63	45.66	27.10
	PHASE	50.40	50.40	50.40	60.40	60.40	60.40	60.40	60.40	60.40	60.40
60	AMPL. PHASE	6595.53 50.40		1874.86	1016.60	557.78	309.74 50.40	174.09	99.04	57.96	34.58

360	AMPL.	7416.94	3947.25		1169.41	652.62	370.82	214.73	126.74	76.24	46.79
10		1830			PER LIMIT		00 GV	4	2- /-		11
10	PHASE	1529.43	889.91 60.40	520.45	305.93 60.40	180.76	107.34	64.06	38.42	23.16	14.02
30	AMPL. PHASE	3071.54		996.30	571.28	330.42	193.81	114.82	68.72	60.40	25.05
60	PHASE	3795.81 55.40			717.04	417.01 55.40	55.40	144.09	60.40	51.96	31.70
360	AMPL.	3997.71			793.02	472.01	284.10	173.07	106.70	66.60	42.16

JUNGFRAUJOCH

				LATITUDE		5 GEDGR	APHIC LONG		7.98		
WIDTH (DEG)	BETA =	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				HP	PER LIMIT	= 500.	oo GV				
10	AMPL. PHASE	27101.53 7.02			941.84 7.02	317.90	113.90	47.42 67.02	26.41 67.02	14.85 67.02	8.43
30	AMPL. PHASE	46715.84	15591.18	5419.40 17.02	1922.77	697.64	259.27 17.02	123.01 62.02	65.00	35.52 67.02	20.77
60	AMPL. PHASE	70303.35	23734.31		3075.94	1197.37	494.05	215.92	108.04 57.02	58.11 57.02	32.26 67.02
360	AMPL.	98497.67	34568.24	12585.09	4797.79	1934.42	832.03	383.69	189.72	99.98	55.72
					PER LIMIT	= 188.	75 GV				
10	PHASE	8813.88 17.02		1331.48	521.25 17.02	17.02	86.76 57.02	67.02	26.41 67.02	14.85	67.02
30	AMPL.	17730.65	7021.83	2809.19	1136.47	465.38	226.09	116.40	63.29	35.52	20.77
	PHASE	22.02	22.02	22.02	22.02	22.02	57.02	62.02	67.02	67.02	72.02
60	AMPL.	27539.01	11401.57	4807.19	2068.51	910.14	421.97	201.34	103.86	56.79	32.05
	PHASE	37.02	37.02	37.02	37.02	37.02	42.02	42.02	57.02	57.02	67.07
360	AMPL.	35724.52	15006.56	6474.95	2884.80	1334.07	643.20	324.15	170.89	94.01	53.83
					PER LIMIT		25 GV				
10	PHASE	4154.79	1757.73	745.93	348.83	171.86	86.36 62.02	47.42 67.02	26.41 67.02	14.85	8.43 67.02
30	AMPL. PHASE	9032.64	3959.14 32.02	1773.90 52.02	849.78 52.02	419.71 57.02	215.00 57.02	112.33	67.02	35.29 72.02	72.02
60	AMPL. PHASE	16342.34 42.02	7400.08	3402·10 42·02	1590.12 42.02	756.43 42.02	368.39 47.02	186.04 57.02	100.87 57.02	55.70 57.02	31.85 67.02
360	AMPL.	20757.88	9512.34		2144.40	1062.27	543.43	287.52	157.44	89.08	52.02
10	AMPL.	2393.37	1168.88	578.91	PER LIMIT 292.45	157.74	00 GV 86.02	47.42	26.41	14.85	8.43
	PHASE	62.02		62.02	67.02	67.02	67.02	67.02	67.02	67.02	67.02
30	AMPL. PHASE	5598.31 57.02	2785.41 57.02	1405.17 57.02	718.86 57.02	372.90 57.02	196.74	107.51	67.02	34.67 72.02	20.51 72.02
60	AMPL. PHASE	10264.61 47.02	4979.25	2447.26.	1219.55	616.51	321.59 57.02	174.55 57.02	96.22 57.02	53.82 57.02	31.07
360	AMPL.	12879.01	6326.77	3169.95	1623.51	851.61	458.21	253.05	143.49	83.45	49.72
				UP	PER LIMIT	= 50.	00 GV				
10	AMPL. PHASE	1793.23 67.02	949.91 67.02	508.05 67.02	274.38 67.02	149.63 67.02	82.38 67.02	45.78 67.02	25.68 67.02	14.52 67.02	8.28
30	AMPL. PHASE	3788.16 57.02	1998.51 57.02	1076.24	585.61 62.02	321.40 62.02	177.89	99.28	56.65	33.30	19.91
60	AMPL. PHASE	6254.30 52.02		1730.41 52.02	928.26	507.31 57.02	280.24	156.46	88.31 57.02	50.75	29.89
360	AMPL.	7448.55	3966.09	2143.06	1176.52	656.91	373.35	216.03	127.36	76.38	46.62
						= 29.					
10	PHASE	1020.87 67.02		330.62 67.02	189.26 67.02	108.77 67.02	67.02	36.35 67.02	67.02	67.02	7.23 67.02
30	AMPL. PHASE	2378.06 62.02		763.27 62.02	434.92 62.02	248.82 62.02	144.37 72.02	86.07 72.02	51.61 72.02	31.12 72.02	18.86
60	AMPL . PHASE	3538.85 57.02			649.88 57.02	373.45 57.02	218.82	129.04	76.58 67.02	45.74	27.48
360	AMPL.	3972.93	2300.76	1344.62	793.46	473.04	285.03	173.60	106.94	66.58	41.92

KIEL

GEOGRAPHIC LATITUDE = 54.33 GEOGRAPHIC LONGITUDE = 10.13

SQUARE WAVE AMPLITUDE AND PHASE (DEGREES)

				SQUARE WAV	E AMPLITU	DE AND PH	ASE (DEGR	EES)			
WIDTH (DEG)	HABETA =	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				UP	PER LIMIT	= 900-0	00 GV				
10	AMPL.	25308.00	8316.63		919.79	333.50	146.65	84.26	49.56	29.43	17.65
	PHASE	9.87	9.87	9.87	9.87	14.87	54.87	49.87	49.87	49.87	49.87
30	AMPL.	40982.18	14152.13	4992.48	1804.39	675.31	331.59	174.23	95.20	53.66	31.11
	PHASE	19.87	19.87		19.87	44.87	49.87	49.87	49.87	49.87	54.87
60	AMPL.	63189.10	22126.77	8194.80	3196.34	1331 31	587.85	275.64	139.13	74 10	41 72
00	PHASE	9.87	29.87		34.87	1331.31	34.87	39.87	39.87	74.18	41.73 59.87
			27107		3	34407		37.0	37.01	14.07	27.61
360	AMPL.	97998.92	34309.48	12457.92	4736.93	1905.88	819.09	378.31	187.94	100.01	56.53
				UP	PER LIMIT	= 188.	75 GV				
10	AMPL .	10437.95		1562.64	609.59	252.38	144.91	84.26	49.56	29.43	17.65
	PHASE	14.87	14.87	14.87	14.87	49.87	49.87	49.87	49.87	49.87	49.87
30	AMPL.	17665.92	7063.39	2863.28	1179.08	594.29	310.52	167.59	93.10	52.99	30.90
•	PHASE	24.87	24.87		24.87	49.87	49.87	49.87	49.87	49.87	54.87
60	AMPL.			4995.87		1041.82	503.22	252.73	132.39	72.84	41.31
	PHASE	39.87	39.87	39.87	39.87	39.87	39.87	39.87	44.87	44.87	59.87
360	AMPL.	34875.99	14644.83	6317.45	2815.01	1302.90	629.48	318.57	169.05	94.02	54.64
	-		•								
						= 111.					
10	AMPL. PHASE	4819.79 19.87	2060.86	19.87	445.65	252.38 49.87	144.91	84.26	49.56	29.43	17.65
	PHASE	17.07	19.87	17.07	47.07	47:01	47.01	49.07	49.87	49.07	49.87
30	AMPL.	9405.66	4158.45	1985.95	1017.15	535.09	288.79	159.62	90.17	51.92	30.70
	PHASE	29.87	29.87	49.87	49.87	49.87	49.87	49.87	49.87	49.87	54.87
60	AMPL.	16622.51	74.04 49	3633.83	1760.72	876.26	448.50	236.24	127.99	71.23	40.00
•	PHASE	44.87	7686.63	44.87	44.87	44.87	44.87	44.87	44.87	44.87	40.92 59.87
											27.01
360	AMPL.	20207.65	9260.11	4340.75	2089.36	1036.53	531.70	282.67	155.87	89.18	52.87
				110	PER LIMIT	- 80	00 GV				
10	AMPL.	2696.51	1455.42	798.90	445.65	252.38	144.91	84.26	49.56	29.43	17.65
	PHASE	49.87	49.87		49.87	49.87	49.87	49.87	49.87	49.87	49.87
30	PHASE	5837.61 49.87	3028.06	1600.11	861.36	472.18	263.38	149.37	86.01 49.87	50.24 49.87	29.96
	FINASE	47.07	49.87	77.07	49.87	49.87	47.01	47.07	49.07	47.07	54.87
60	AMPL.	10641.15	5268.43	2656.10	1365.36	716.37	383.83	210.09	117.40	66.95	40.18
	PHASE	44.87	44.87	44.87	44.87	44.87	44.87	44.87	44.87	44.87	59.87
360	AMPL.	12517.32	6150.99	3083.66	1581.03	830.95	448.55	249.04	142.26	83.68	50.64
300		125152	0130.77	3003.00	1301.03	030.75	440.55	247.04	142.20	03.08	30.04
					PER LIMIT	= 50.	00 GV				
10	AMPL.	2307.87	1283.96		412.25	237.63	138.40	81.39	48.28	28.87	17.40
	PHASE	49.87	49.87	49.87	49.87	49.87	49.87	49.87	49.87	49.87	49.87
30	AMPL.	4398.55	2403.19	1326.77	740.23	417.31	238.58	138.52	81.27	48.18	29.15
	PHASE	44.87			44.87	44.87	49.87	49.87	49.87	54.87	54.87
60	AMPL.			1881.00	1028.09	569.50 44.87	319.85	182.37	105.81	63.39	38.87
							44-M/	49.87	49.87	59.87	64.87
	PHASE	44.87	44.07	44.07	*****	44.01					
360	AMPL.			2087.12			366.27	213.15	126.62	76.85	47.63
300				2087.12	1147.39	642.12	366.27		126.62	76.85	
	AMPL.	7245.09	3859.58	2087.12 UP	1147.39 PER LIMIT	642.12	366.27	213.15			47.63
10	AMPL.	7245.09	3859.58	2087.12 UP 553.19	1147.39 PER LIMIT 330.70	642.12 = 29.1 198.49	366.27 00 GV 119.62	213.15	43.94	26.78	47.63
10	AMPL. PHASE	7245.09 1567.08 49.87	3859.58 929.14 49.87	2087.12 UP 553.19 49.87	1147.39 PER LIMIT	642.12 = 29. 198.49 49.87	366.27	213.15			47.63
	AMPL. PHASE	7245.09 1567.08 49.87 3104.00	3859.58 929.14 49.87 1780.92	2087.12 UP 553.19 49.87 1027.48	1147.39 PER LIMIT 330.70 49.87 596.18	542.12 = 29. 198.49 49.87 347.94	366.27 00 GV 119.62 49.87 205.17	72.36 49.87 122.40	43.94 49.87 73.94	26.78 49.87 45.05	47.63 16.39 49.87 27.64
10	AMPL. PHASE	7245.09 1567.08 49.87	3859.58 929.14 49.87 1780.92	2087.12 UP 553.19 49.87 1027.48	1147.39 PER LIMIT 330.70 49.87	642.12 = 29. 198.49 49.87	366.27 00 GV 119.62 49.87	213.15 72.36 49.87	43.94 49.87	26.78 49.87	47.63 16.39 49.87
10	AMPL. PHASE AMPL. PHASE	7245.09 1567.08 49.87 3104.00 44.87	929.14 49.87 1780.92 44.87	2087.12 UP 553.19 49.87 1027.48 44.87	1147.39 PER LIMIT 330.70 49.87 596.18 44.87	29. 198.49 49.87 347.94 44.87	366.27 00 GV 119.62 49.87 205.17 49.87	72.36 49.87 122.40 49.87	43.94 49.87 73.94 54.87	26.78 49.87 45.05 54.87	47.63 16.39 49.87 27.64 54.87
10	AMPL. PHASE	7245.09 1567.08 49.87 3104.00	3859.58 929.14 49.87 1780.92 44.87 2166.75	2087.12 UP 553.19 49.87 1027.48 44.87 1250.37	1147.39 PER LIMIT 330.70 49.87 596.18	542.12 = 29. 198.49 49.87 347.94	366.27 00 GV 119.62 49.87 205.17	72.36 49.87 122.40	43.94 49.87 73.94	26.78 49.87 45.05	47.63 16.39 49.87 27.64 54.87 36.54
10	AMPL. PHASE AMPL. PHASE AMPL.	7245.09 1567.08 49.87 3104.00 44.87 3781.98 49.87	3859.58 929.14 49.87 1780.92 44.87 2166.75 49.87	2087.12 UP 553.19 49.87 1027.48 44.87 1250.37	1147.39 PER LIMIT 330.70 49.87 596.18 44.87 727.09	642.12 = 29. 198.49 49.87 347.94 44.87	366.27 00 GV 119.62 49.87 205.17 49.87 253.93	72.36 49.87 122.40 49.87 153.69	43.94 49.87 73.94 54.87	26.78 49.87 45.05 54.87 58.17	47.63 16.39 49.87 27.64 54.87

KIEV
GEOGRAPHIC LATITUDE = 50.72 GEOGRAPHIC LONGITUDE = 30.30

				C LATITUDE Square way	E AMPLITU		APHIC LONG		30.30		
WIDTE (DEG	H/BETA	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				118	PER LIMIT	- 800.	00 GV				
10	AMPL.	26627.92	8807.12	2943.75	996.06	342,02	160.76	83.89	46.60	26.48	15.32
	PHASE	9.70	9.70	9.70	9.70	9.70	54.70	59.70	59.70	59.70	59.70
30	AMPL. PHASE	43519.77	14754.63	5209.35	1883.74	19.70	328.68	170.86	91.99	50.96	28.89
		*****	.,,,,				34.10	24.70		24.10	24.10
60	PHASE	68283.36 4.70	23459.24	8617.43	3325.69	1369.24	593.77 34.70	274.72 39.70	135.81	69.96 39.70	37.61 44.70
360	AMPL.	101566.41	35548.48	12900.17	4899.21	1966.75	841.93	386.45	190.31	100.04	55.65
				110	PER LIMIT	- (00.	75 GV				
10	AMPL.	10217.49	3912.21	1504.12	586.90	296.47	155.21	83.89	46.60	26.48	15.32
	PHASE	14.70	14.70	14.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70
30	AMPL.	18164.67	7236.99	2919.23	1220.58	600.28	306.84	163.98	89.82	50.28	28.67
	PHASE	24.70	24.70	24.70	49.70	49.70	54.70	54.70	54.70	54.70	54.70
60	AMPL.	and the second second second	12255.89	5304.28	2362.47	1086.07	516.34	254.07	129.28	67.90	37.17
360	PHASE	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	39.70	44.70
300	AMPL.	30131.17	15163.48	6534.78	2906.88	1341.69	645.36	324.51	170.73	93.86	53.66
				UP	PER LIMIT	= 111.:	25 GV				
10	AMPL.	4650.29	1965.64	979.31	503.31	265.78	143.95	79.76	45.09	25.93	15.12
	PHASE	19.70	19.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70
30	AMPL.	9661.80	4398.68	2157.37	1084.82	559.38	295.58	159.85	88.31	49.73	28.47
	PHASE	29.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70
60	AMPL.	17213.95	7914.37	3710.51	1777.38	873.30	440.72	228.15	121.10	65.83	36.56
	PHASE	39.70	39.70	39.70	39.70	44.70	44.70	44.70	44.70	44.70	44.70
360	AMPL.	20925.51	9581.52	4485.65	2154.63	1065.55	544.01	287.31	157.08	88.85	51.84
				(10	PER LIMIT	. 80.	oo GV				
10	AMPL.	2940.36	1517.57	800.10	430.61	236.28	131.98	74.90	43.11	25.12	14.79
	PHASE	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70
30	AMPL.	6529.05	3324.36	1722.98	909.17	488.34	266.85	148.23	83.61	47.82	27.70
	PHASE	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70
60	AMPL.	11013.50	5407.60	2696.94	1367.53	707.54	373.68	201.04	110.13	61.53	35.33
	PHASE	39.70	39.70	39.70	39.70	44.70	44.70	44.70	44.70	49.70	64.70
360	AMPL.	12953.50	6358.54	3182.48	1627.68	852.44	457.82	252.46	142.97	83.13	49.54
				UP	PER LIMIT	- 50.	OO GV				
10	AMPL.	1924.01	1078.62	610.43	348.61	200.81	116.63	68.26	40.23	23.88	14.26
	PHASE	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	59.70	39.70
30	AMPL.	4509.09	2443.65	1338.74	741.42	415.06	234.82	134.22	77.46	45.14	26.53
	PHASE	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70	54.70
60	AMPL.	6762.65		1893.46	1023.45	560.98	311.15	174.65	99.19	57.14	\$4.05
	PHASE	39.70	39.70	39.70	49.70	49.70	49.70	49.70	49.70	54.70	64.70
360	AMPL.	7488.12	3983.17	2149.45	1178.12	656.69	372.53	215.25	126.73	76.05	46.45
					PER LIMIT		00 GV				
10	AMPL. PHASE	1540.05 59.70	894.72 59.70	522.29	306.34 59.70	180.53	106.89	63.58	37.98 59.70	22.79 59.70	13.74
30	AMPL.	3034 57	1710 20	986.19	572.36	333 00	100 44	110 01	40 44	40 00	
30	PHASE	3024.57 49. 70	1718.28	54.70	54.70	333.93 54.70	195.86	115.51 54.70	68.46 54.70	54.70	24.44
60	AMPL.	3809.80	2169.13	1242.64	716.45	415.85	243.04	143.05	85.54	51.85	31.64
	PHASE	54.70	54.70	54.70	54.70	54.70	54.70	54.70	64.70	64.70	64.70
360	AMPL.	4032.45			797.73	474.14	284.87	173.14	106.48	66.30	41.74

LEEDS

GEOGRAPHIC LATITUDE = 53.82 GEOGRAPHIC LONGITUDE = 358.45

SQUARE WAVE AMPLITUDE AND PHASE (DEGREES)

	SQUARE WAVE AMPLITUDE AND PHASE (DEGREES)											
WIDTH	H/BETA .	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2	
					PER LIMIT	- 400	00 GV					
10	AMPL.	24435.23	8185.95	2770.27	947.51	327.68	151.10	86.92	50.94	30.26	18.16	
	PHASE	-348.45	-348.45	-348.45	-348.45	-348.45	-308.45	-308.45	-308.45	-308.45	-308.45	
30	AMPL.		13753.65	4808.54	1758.35	703.63	343.27	176.37	94.58	53.88	31.68	
	PHASE	-353.45	-353.45	-338.45	-338.45	-313.45	-313.45	-313.45	-313.45	-303.45	-303.45	
60	AMPL.	62743.81	21925.12	8177.00	3196.74	1319.09	582.99	274.86	136.97	73.34	42.25	
	PHASE		-328.45	-328.45	-328.45	-328.45	-323.45	-323.45	-323.45	-313.45	-308.45	
360	AMPL.	97732.99	34216.89	12424.81	4724.70	1901.19	817.38	377.68	187.78	99.96	56.62	
						***	-F -					
10	AMPL.	9793 40	3420.07		PER LIMIT 527.10	251.51	75 GV 145.69	85.33	50.47	30.12	18.12	
	PHASE	-343.45	-343.45	-343.45	-343.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	
	,	3.3.13	313113	3.3.43	343143	300.43	300113	-300113	300.13	300.47	-300.43	
30	AMPL.	15505.36	6210.93	2520.18	1166.81	588.35	306.65	165.21	92.14	53.22	31.47	
	PHASE	-338.45	-338.45	-338.45	-313.45	-313.45	-313.45	-308.45	-308.45	-303.45	-303.45	
40	AMDI	24782 02			2102 22		400 04	2/7 /5	100 00	22		
60	PHASE	26780.93	-323.45	4897.73 -323.45	2192.32 -323.45	1016.86	489.94	247.45 -318.45	130.53	72.02	41.83	
	FINASE	-323.45	-323.43	-323.43	-323.43	-363.43	-323.43	-310.47	-310.43	-313.45	-306.43	
360	AMPL.	34782.10	14605.83	6301.12	2808.06	1299.90	628.28	318.10	168.96	94.00	54.73	
					PER LIMIT							
10	AMPL.	4296.38	1872.09	845.31	439.43	251.51	145.69	85.33	50.47	30.12	18.12	
	PHASE	-338.45	-338.45	-313.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	
30	AMPL.	8080.39	3907.04	1958.13	1005.99	529.32	284.98	158.46	90.41	52.68	31.28	
	PHASE	-303.45	-303.45	-313.45	-313.45	-313.45	-313.45	-303.45	-303.45	-303.45	-303.45	
60	AMPL.	15987.77	7391.29	3494.63	1693.97	843.49	432.54	230.03	125.65	70.90	41.44	
	PHASE	-318.45	-318.45	-318.45	-318.45	-318.45	-313.45	-313.45	-313.45	-308.45	-308.45	
360	AMPL.	20153.75	9235.80	4329.78	2084.37	1034.24	530.75	282.29	155.82	89.16	52.95	
		20100113	,,,,,,,,		2001.05	103.42.					32.	
				UP	PER LIMIT	= 80.	00 GV					
10	AMPL.	2592.07	1395.82	777.78	439.43	251.51	145.69	85.33	50.47	30.12	18.12	
	PHASE	-338.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	
30	AMPL.	6269.45	3215.71	1679.54	893.34	483.76	266.55	149.32	85.90	50.85	30.54	
-	PHASE	-313.45	-313.45	-313.45	-313.45	-313.45	-313.45	-313.45	-303.45	-303.45	-303.45	
			3.30.12	2.0,	3134.5	310.42			2034.2		303.45	
60	AMPL.	10620.54	5259.96	2652.97	1364.50	716.39	384.16	210.45	118.09	68.46	40.52	
	PHASE	-313.45	-313.45	-313.45	-313.45	-313.45	-313.45	-313.45	-308.45	-308.45	-298.45	
360	AMPL.	12484.40	6135.16	3076.10	1577.42	829.24	447.84	248.76	142.26	83.67	50.73	
300	Anr.	12404.40	0133.10	30 / 6 • 10	15/1.42	024.24	447.04	240.10	142.20	03.07	30.73	
				UP	PER LIMIT	= 50.	00 GV					
10	AMPL.	2350.79	1310.28	739.41	422.21	243.78	142.22	83.77	49.78	29.81	17.98	
	PHASE	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	-308.45	
20					7.0.10							
30	AMPL. PHASE	Anna Control of the Control			749.18			137.37		48.84	29.65	
	PHASE	-313.45	-313.43	-313,45	-313.45	-313.45	-315.45	-313.49	-303.45	-303.45	-305.45	
60	AMPL.	6531.10	3482.60	1880.02	1028.12	572.03	324.06	186.31	108.71	64.38	39.19	
	PHASE	-313.45	-313.45	-313.45	-313.45	-308.45	-308.45	-308.45	-308.45	-308.45	-298.45	
360	AMPL.	1220.54	3849.98	2082.29	1144.94	640.91	365.79	212.97	126.62	76.88	47.75	
				110	PER LIMIT	. 20.	00 CV					
10	AMPL.	1612.02	956.43	569.82		204.75	123.49	74.76	45.45	27.73	16.98	
	PHASE				-308.45	-308.45	-308.45			-308.45		
30	AMPL.				586.52			123.15	74.77		28.15	
	PHASE	-313.45	-313.45	-313.45	-313,45	-313.45	-303.45	-303.45	-303.45	-303.45	-303.45	
60	AMPL.	3804 - 87	2184-51	1263.89	737.20	433.67	257-40	154.17	94.26	58.52	36.69	
•	PHASE	-308.45			-308.45			-308.45	-298.45	-298.45	-298.45	
360	AMPL.	3902.06	2257.67	1319.14	778.98	465.27	281.46	172.44	107.17	67.51	43.75	

GECGRAPHIC LATITUDE = 65.00 GEOGRAPHIC LONGITUDE = 25.42

				SQUARE WAY			ASE (DEGRI		25.42		
WIDTH (DEG)	H/BETA =	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
					PER LIMIT		00 GV				
10	AMPL.	23169.59	8027.91		1034.17	386.71	00 GV 153.56	86.31	50.55	30.47	18.66
	PHASE	14.58	14.58	14.58	14.58	14.58	39.58	39.58	39.58	39.58	39.58
30	AMPL.	34203.31	11912.27	4259.61	1613.90	699.78	330.66	184.56	107.42	64.93	40.53
	PHASE	14.58	14.58	14.58	24.58	24.58	39.58	39.58	39.58	44.58	44.58
60	AMPL.	51827.32	17882.50	6840.56	2774.32	1202.92	563.04	283.23	152.03	86.11	51.02
	PHASE	4.58	29.58	29.58	29.58	29.58	34.58	39.58	39.58	39.58	39.58
360	AMPL.	96997.81	33960.61	12332.64	4690.46	1888.13	812.25	375.79	187.20	100.05	56.85
				UP	PER LIMIT	- 188.	75 GV				
10	AMPL.	9286.04	3702.78	1494.38	611.46	254.09	132.71	79.74	48.47	29.76	18.45
	PHASE	14.58	14.58	14.58	14.58	14.58	39.58	39.58	39.58	39.58	39.58
30	AMPL.	13713.20	5841.96	2593.97	1191.19	567.16	309.81	177.99	105.34	64.27	40.32
	PHASE	19.58		24.58	24.58	24.58	39.58	39.58	39.58	44.58	44.58
60	AMPL.	22729.16	9832.82	4392.83	2037.11	984.91	497.95	263.52	145.80	84.13	50.39
	PHASE	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
360	AMPL.	34521.82	14497.51	6255.14	2788.24	1291.35	624.58	316.65	168.52	94.11	54.98
				110	PER LIMIT	= 111.	25 GV				
10	AMPL.	4730.42	2030.34	878.43	383.54	223.69	132.71	79.74	48.47	29.76	18.45
	PHASE	19.58		19.58	19.58	39.58	39.58	39.58	39.58	39.58	39.58
30	AMPL.	8885.97	4185.87	2028.26	1013.08	528.39	299.06	174.04	103.89	63.73	40.12
	PHASE	29.58	29.58	29.58	29.58	39.58	39.58	39.58	39.58	44.58	44.58
60	AMPL.	14663.61	6871.97	3305.92	1638.10	838.43	444.18	243.78	138.55	81.46	49.41
•	PHASE	39.58		39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
	111136	3,6,0	27.00	2,000	37.00	350		3	37.000	22.02.0	3.435
360	AMPL.	20003.83	9167.98	4298.70	2070.03	1027.71	527.80	281.11	155.47	89.37	53.20
				UF	PER LIMIT	= 80.	00 GV				
10	AMPL.	2193.26	1098.69	632.36	369.06	218.13	130.42	78.80	48.08	29.60	18.39
	PHASE	19.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
30	AMPL.	5503.09	2826.16	1531.97	850.39	483.17	280.77	166.68	101.42	62.97	39.82
	PHASE	29.58	39.58	39.58	39.58	39.58	39.58	44.58	44.58	44.58	44.58
60	AMPL.	9589.28	4820.46	2476.43	1302.70	702.78	389.32	221.59	129.58	77.84	47.96
	PHASE	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
360	AMPL.	12392.34	6090.72	3054.46	1566.93	824.23	445.51	247.83	142.01	83.88	51.01
				115	PER LIMIT	= 50.	00 GV				
10	AMPL.	1783.41	1016.40	597.66	354.43	211.96	127.82	77.70	47.62	29.41	18.30
	PHASE	34.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
30	AMPL.	4104.94	2289.70	1298.00	748.21	438.70	261.70	158.79	97.99	61.47	39.16
	PHASE	44.58	44.58	44.58	44.58	44.58	44.58	44.58	44.58	44.58	44.58
60	AMPL.	6110.48	3308.50	1818.89	1016.54	578.17	335.03	197.91	119.27	73.33	45.99
•	PHASE	39.58		39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
360	AMPL.	7174.14	3822.79	2068.15	1137.70	637.31	364.07	212.33	126.54	77.10	48.05
					PER LIMIT	. 20	00 GV				
10	AMPL.	1561.86	927.28	553.89	332.94	201.40	122.64	75.16	46.37	28.80	17.99
	PHASE	39.58		39.58	39.58	39.58	39.58	39.58	39.58	39.58	39.58
30	AMPL.	3061.34	1801.31	1069.60	641.24	388.31	237.62	146.97	91.91	58.11	37.36
	PHASE	39.58		39.58	39.58	39.58	39.58	39.58	39.58	39.58	44.58
60	AMPL.	3729.42	2165.88	1270.22	752.92	451.46	274.07	168.57	105.13	66.57	42.71
90	PHASE	44.58	44.58	44.58	44.58	44.58	44.58	44.58	44.58	44.58	44.58
340							280.38	172.12	107.19	67.79	43.55
360	AMPL.	3874.73	/242.52	1310.77	774.49	463.05	200.30	112.12	107.19	67.79	43.55

PIC DU MIDI

GECGRAPHIC LATITUDE = 42.93 GEOGRAPHIC LONGITUDE = 0.25

SQUARE WAVE AMPLITUDE AND PHASE (DEGREES)

				SQUARE WAY	E AMPLITU	DE AND PH	ASE (DEGR	EES)			
(DEG)		+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				119	PER LIMIT		00 GV				
10	AMPL.	27998.35	9270.99		1051.60	362.02	134.81	52.28	20.88	9.91	5.28
	PHASE	9.75	9.75	9.75	9.75	9.75	14.75	14.75	14.75	64.75	64.75
30	AMPL.	51772.51	17533.30	6039.81	2120.75	760.74	284.45	110.95	52.16	27.70	14.92
30	PHASE	14.75			14.75	14.75	19.75	24.75	64.75	64.75	64.75
										• • • • •	
60	AMPL.		26358.34		3366.52	1265.06	510.69	215.80	97.28	48.03	26.23
	PHASE	9.75	9.75	24.75	24.75	24.75	34.75	34.75	39.75	64.75	84.75
360	AMPL.	106830.83	37451.17	13605.52	5166.72	2069.49	881.00	400.40	194.13	100.00	54.30
10	AMPL.	12750 90	4871.79		PER LIMIT 724.72	283.17	112.03	45.10	19.02	9.91	5.28
	PHASE		14.75		14.75	14.75	14.75	14.75	59.75	64.75	64.75
							• • • • •			••••	• • • • •
30	AMPL.	20726.42			1335.03	547.89	228.13	99.82	52.16	27.70	14.92
	PHASE	24.75	24.75	24.75	24.75	24.75	24.75	64.75	64.75	64.75	64.75
60	AMPL.	29720.85	12256.21	5138.81	2194.67	956.36	425.84	193.99	90.47	47.31	26.23
	PHASE	39.75			39.75	39.75	39.75	39.75	39.75	64.75	84.75
360	AMPL.	380/5.94	16212.42	6971.54	3089.71	1417.67	675.98	335.75	173.70	93.52	52.24
				UP	PER LIMIT	. 111.	25 GV				
10	AMPL.		2108.24		361.89	153.82	75.33	37.53	19.02	9.91	5.28
	PHASE	19.75	19.75	19.75	19.75	59.75	59.75	59.75	59.75	64.75	64.75
30	AMPL.	10853.13	4678.96	2031.40	888.67	396.55	191.42	95.40	50.54	27 11	14 30
30	PHASE	29.75		29.75	29.75	49.75	49.75	64.75	64.75	27.11	14.70
	, ,,,,,,,	• • • • •				4	4	04	04	04.1,	04.75
60	AMPL.		7660.93		1598.96	746.39	353.79	170.38	86.52	46.72	26.23
	PHASE	44.75	44.75	44.75	44.75	44.75	44.75	44.75	64.75	64.75	84.75
360	AMPL.	22426.17	10247.15	4781.71	2285.83	1122.56	567.64	295.98	159.11	88.15	50.28
					PER LIMIT						
10	PHASE	2214.22 59.75	1080.05	536.36	268.94 64.75	136.19	69.67	36.00 64.75	18.80	9.91	5.28
	FUMSE	37.13	04.75	04.75	04.75	64.75	64.75	04.75	64.75	64.75	64.75
30	AMPL .	5795.77	2804.34	1370.52	676.68	337.61	172.14	91.24	48.86	26.43	14.42
	PHASE	54.75	54.75	54.75	54.75	54.75	64.75	64.75	64.75	64.75	64.75
60	AMPL.	10446.70	4970.84	2388.22	1173.48	583.80	293.75	150.37	81.48	44.68	25.95
•	PHASE	44.75			49.75	49.75	49.75	64.75	64.75	64.75	84.75
360	AMPL.	13871.79	6788.46	3383.18	1720.27	893,85	475.13	258.53	143.98	82.03	47.79
				119	PER LIMIT	= 50.	00 GV				
10	AMPL.	1542.23	790.39		211.86	110.84	58.41	31.00	16.57	8.97	5.12
	PHASE	64.75	64.75	64.75	64.75	64.75	64.75	64.75	64.75	64.75	74.75
20		3413 31	1040 01	987.40	#25 22	201 20	151 47			24 22	
30	PHASE	54.75		64.75	64.75	64.75	64.75	64.75	64.75	24.73	13.68
	FINSE	34113	044.7	04.13	04.13	04.13	04.13	04.13	04.13	04.75	04.75
60	AMPL.		3175.44		858.17	452.50	246.33	135.22	74.83	42.47	25.30
	PHASE	54.75	54.75	54.75	54.75	64.75	64.75	64.75	64.75	84.75	84.75
360	AMPL.	7975.78	4225.38	2268.27	1234.98	682.45	382.99	218.38	126.44	74.39	44.44
			4227730	22-012		002.43	302.	2.0.50			*****
					PER LIMIT		00 GV				
10	PHASE	842.25		74.75	148.93	84.17	47.74	27.17	15.51	8.90	5.12
	PHASE	74.75	14.15		14.13	74.75	74.75	74.75	74.75	74.75	74.75
30	AMPL.	2093.28	1162.78	647.60	361.62	202.48	113.68	63.99	36.13	21.35	12.70
	PHASE	64.75	64.75	64.75	64.75	64.75	64.75	64.75	64.75	79.75	79.75
60	AMPL.	3292.83	1841.27	1033.43	582.24	329.34	187.03	109.55	65.52	39.38	23.81
••	PHASE	64.75			64.75	64.75	64.75	84.75	84.75	84.75	84.75
360	AMPL.	4202.22	2417.28	1401.37	819.07	482.82	287.09	172.27	104.29	63.68	39.30

ROME

GEOGRAPHIC LATITUDE = 41.90 GEOGRAPHIC LONGITUDE = 12.52

SOURCE HAVE AMPLITUDE AND PHASE (DEGRES)

				C LATITUDE SQUARE WAY	# 41.9		APHIC LON ASE (DEGR		12.52		
WIDT	H/BETA	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
					PER LIMIT	- 400	oo GV				
10	AMPL.	12504.70	10525.94		1128.40	375.86	133.17	48.65	19.99	10.15	5.22
•	PHASE	7.48			7.48	7.48	12.48	12.48	57.48	57.48	57.48
30	AMPL.		20129.60		2386.83	846.07	306.58	116.56	52.63	26.37	14.18
	PHASE	12.48	12.48	12.48	12.48	12.48	17.48	17.48	57.48	57.48	67.48
60	AMPL.	12.48		10268.97	3745.55 27.48	1408.62 27.48	547.50 27.48	223.32	98.10 37.48	47.04 52.48	24.31
240											
360	AMPL.	117513.09	41052.08			2222.66	934.55	417.93	198.68	100.07	52.87
					PER LIMIT		75 GV				
10	AMPL. PHASE	11256.71			12.48	231.33	89.06 12.48	39.89 57.48	19.99 57.48	10.15 57.48	5.22 57.48
30	AMPL. PHASE	20627.03	8141.87	22.48	1305.68	531.39	223.05	102.06 52.48	50.11 57.48	26.30 67.48	67.48
60	AMPL. PHASE	31439.50	12887.50 37.48	5364.36 37.48	2271.04 37.48	979.32 37.48	430.66	194.76	91.21	45.45 52.48	72.48
360	AMPL.	41670.61	17425.53	7465.76	3290.75	1498.17	706.74	346.12	176.01	92.84	50.60
				115	PER LIMIT	. 111.	25 GV				
10	AMPL.	5642.68	2370.01		421.92	178.91	80.71	39.89	19.99	10.15	5.22
	PHASE	22.48			22.48	22.48	57.48	57.48	57.48	57.48	57.48
30	AMPL.	11456.27	4970.84	2172.94	957.57	425.64	198.77	97.27	49.27	26.30	14.18
	PHASE	32.48			32.48	32.48	52.48	52.48	67.48	67.48	67.48
60	AMPL.	18069.08	8050.75	3628.57	1655.92	770.81	366.72	177.22	86.97	44.15	23.81
	PHASE	42.48			42.48	47.48	47.48	47.48	47.48	52.48	72.48
360	AMPL.	24046.54	10955.77	5090.72	2418.89	1178.11	589.26	302.99	160.18	87.02	48.46
				u	PER LIMIT	= 80.	00 GV				
10	AMPL.	2702.94	1233.36		277.67	138.31	69.62	35.40	18.17	9.42	4.92
	PHASE	27.48	27.48	27.48	57.48	57.48	57.48	57.48	57.48	57.48	57.48
30	AMPL.	6087.16	2800.77	1378.77	685.36	344.01	174.35	89.21	47.45	25.57	13.88
	PHASE	32.48	57.48	57.48	57.48	57.48	57.48	57.48	67.48	67.48	67.48
60	AMPL.	10994.31			1225.55	608.86	305.71	155.14	79.54	42.27	23.44
	PHASE	47.48	47.48	47.48	52.48	52.48	52.48	52.48	52.48	72.48	72.48
360	AMPL.	14806.60	7220.14	3580.29	1808.14	931.10	489.36	262.57	143.83	80.42	45.79
				UI	PER LIMIT	. 50.	00 GV				
10	AMPL.	1584.23		415.68	215.08	112.08	58.82	31.09	16.55	8.87	4.79
	PHASE	67.48	67.48	67.48	67.48	67.48	67.48	67.48	67.48	67.48	67.48
30	AMPL .	3869.22	1982.94		529.44	276.76	148.94	80.59	43.84	23.98	13.18
	PHASE	57.48	57.48	57.48	57.48	67.48	67.48	67.48	67.48	67.48	67.48
60	AMPL.	6416.26	3284.10		875.19	455.79	238.79	128.52	71.24	39.76	22.34
	PHASE	52.48	52.48	52.48	52.48	52.48	52.48	72.48	72.48	72.48	72.48
360	AMPL.	8471.96	4466.98	2382.98	1287.07	704.23	390.49	219.45	125.03	72.19	42.19
					PER LIMIT		00 GV	20.00			
10	PHASE	783.42 57.48			127.46 57.48	69.75 57.48	39.31 77.48	22.35 77.48	12.73	77.48	77.48
30	AMPL.	2163.07	1194.84	661.48	367.03	204.10	113.77	63.56	35.59	19.99	11.25
30	PHASE	67.48			67.48	67.48	67.48	67.48	67.48	67.48	67.48
60	AMPL.	3335.02	1846.86	1025.61	571.19	320.75	182.11	103.73	59.80	34.80	20.32
30	PHASE	67.48			67.48	72.48	72.48	72.48	82.48	82.48	82.48
360	AMPL.	4466.68	2548.61	1463.57	846.17	492.64	288.91	170.65	101.56	60.93	36.76

UTRECHT

GEOGRAPHIC LATITUDE = 52.06 GEOGRAPHIC LONGITUDE = 5.07

				SQUARE WAY			ASE (DEGR		3.07		
WIDTE DEG	H/BETA .	+1.6	+1.4	+1.2	+1.0	+0.8	+0.6	+0.4	+0.2	0.0	-0.2
				UP	PER LIMIT	. 500.	00 GV				
10	AMPL.	23536.82	7802.02		964.89	368.22	182.79	96.34	53.20	30.38	17.79
	PHASE	9.93	9.93	14.93	14.93	54.93	54.93	54.93	54.93	54.93	54.93
30	AMPL.	41996.57	14096.34	4828.79	1750.87	683.96	336.26	174.85	94.38	52.48	30.14
	PHASE	4.93	4.93	19.93	19.93	44.93	49.93	49.93	49.93	49.93	59.93
60	AMPL.	65846.28	22988.32	8493.58	3277.99	1330.62	584.84	273.37	136.09	70.96	39.92
	PHASE	349.93	29.93		29.93	29.93	34.93	39.93	39.93	44.93	49.93
360	AMPL.	99498.63	34831.29	12644.77	4805.89	1931.95	829.01	381.95	189.00	100.00	56.09
	-										
10	AMPL.	11862.10	4521.43		PER LIMIT	300.20	161.39	89.60	51.07	29.71	17.57
•	PHASE	14.93			14.93	54.93	54.93	54.93	54.93	54.93	54.93
30	AMDI	17020 27	7100 50	2071 57	101/ 07	400 20	214 04				20.00
30	AMPL. PHASE	17828.27	7109.59		1214.97	608.20 49.93	314.86	168.11	92.25	51.81 49.93	29.92 59.93
	ringe	24473	24.73	.,,,	47.73	47.73	47.73	47.72	44.45	47.73	34.43
60	AMPL.		11792.84		2279.88	1052.63	503.78	250.10	128.70	69.61	39.49
	PHASE	39.93	39.93	39.93	39.93	39.93	39.93	39.93	39.93	44.93	49.93
360	AMPL.	35405.41	14864.36	6409.93	2854.42	1319.72	636.47	321.24	169.83	93.93	54.14
				119	PER LIMIT	s 111.	25 GV				
10	AMPL.	5223.25	2194.13		498.02	270.14	150.36	85.55	49.58	29.17	17.37
	PHASE	19.93	19.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93
30	AMPL.	9189.29	4174.22	2068.10	1051.23	548.09	292.80	160.01	89.27	50.73	29.72
30	PHASE	29.93	49.93		49.93	49.93	49.93	49.93	49.93	49.93	59.93
						4.4.5	4	*****	4,6,5	,	2
60	AMPL.	16799.43	7750.24		1761.44	871.38	442.64	230.96	123.75	68.12	39.09
	PHASE	44.93	44.93	44.93	44.93	44.93	44.93	44.93	44.93	49.93	49.93
360	AMPL.	20511.61	9396.87	4402.84	2117.61	1049.25	537.19	284.79	156.43	89.07	52.33
				UP	PER LIMIT	= 80.	00 GV				
10	AMPL.	2439.90	1280.17	695.52	397.19	229.46	133.94	78.93	46.91	28.09	16.93
	PHASE	49.93	49.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93
30	AMPL.	6036.42	3121.92	1642.63	879.19	478.51	264.66	148.63	84.67	49.28	29.21
	PHASE	49.93	49.93		49.93	49.93	49.93	49.93	49.93	59.93	59.93
		10704 10									
60	AMPL. PHASE	10726.12	5294.86		1360.01	709.03	376.98 44.93	205.50	115.08	65.64	38.09
					44.75	44.73		*****	47.75		47,75
360	AMPL.	12703.08	6239.95	3126.44	1601.48	840.52	452.77	250.66	142.62	83.44	50.07
				UP	PER LIMIT	= 50.0	no GV				
10	AMPL.		1149.04	659.92	382.18	223.13	131.28	77.80	46.43	27.89	16.85
	PHASE	49.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93	54.93
30	AMPL.	4452.18	2430.79	1340.95	747 42	420 03	239 48	137 60	79.84	47.17	28.30
	PHASE	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	59.93	59.93
60	AMPL.		3525.96		1036.74	573.13	321.09	182.33	104.96	61.21	36.16
	PHASE	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93
360	AMPL.	7349.77	3913.31	2114.61	1161.14	648.78	369.23	214.22	126.74	76.50	47.06
10	AMPL.	1645.69	966.17	570.11	PER LIMIT 338.08	201.47	120.64	72.58	43.86	26.63	16.24
•	PHASE	54.93			54.93	54.93	54.93	54.93	54.93	54.93	54.93
30	AMPL.	3137.73	The second secon		601.17	350.50	205.54	121.24	71.93	42.94	26.26
	PHASE	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	49.93	59.93
60	AMPL.	3802.90		1250.81	724.89	423.24	248.99	147.63	88.92	54.43	33.60
	PHASE	49.93	49.93	49.93	49.93	49.93	49.93	49.93	64.93	64.93	64.93
360	AMPL.	1964-05	2292.13	1337.41	788.54	469.98	283.37	172.97	106.88	66.96	42.47
200	And L.	3704.75	22.72.13	1357.02	700,54	407.70	203.31	112.41	100.00	00.46	42.41